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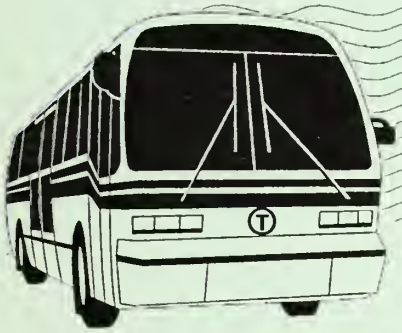
Bus Service Delivery System

GOVERNMENT DOCUMENTS
1993
University of Massachusetts

Appendix to Final Report

The Massachusetts Bay Transportation Authority



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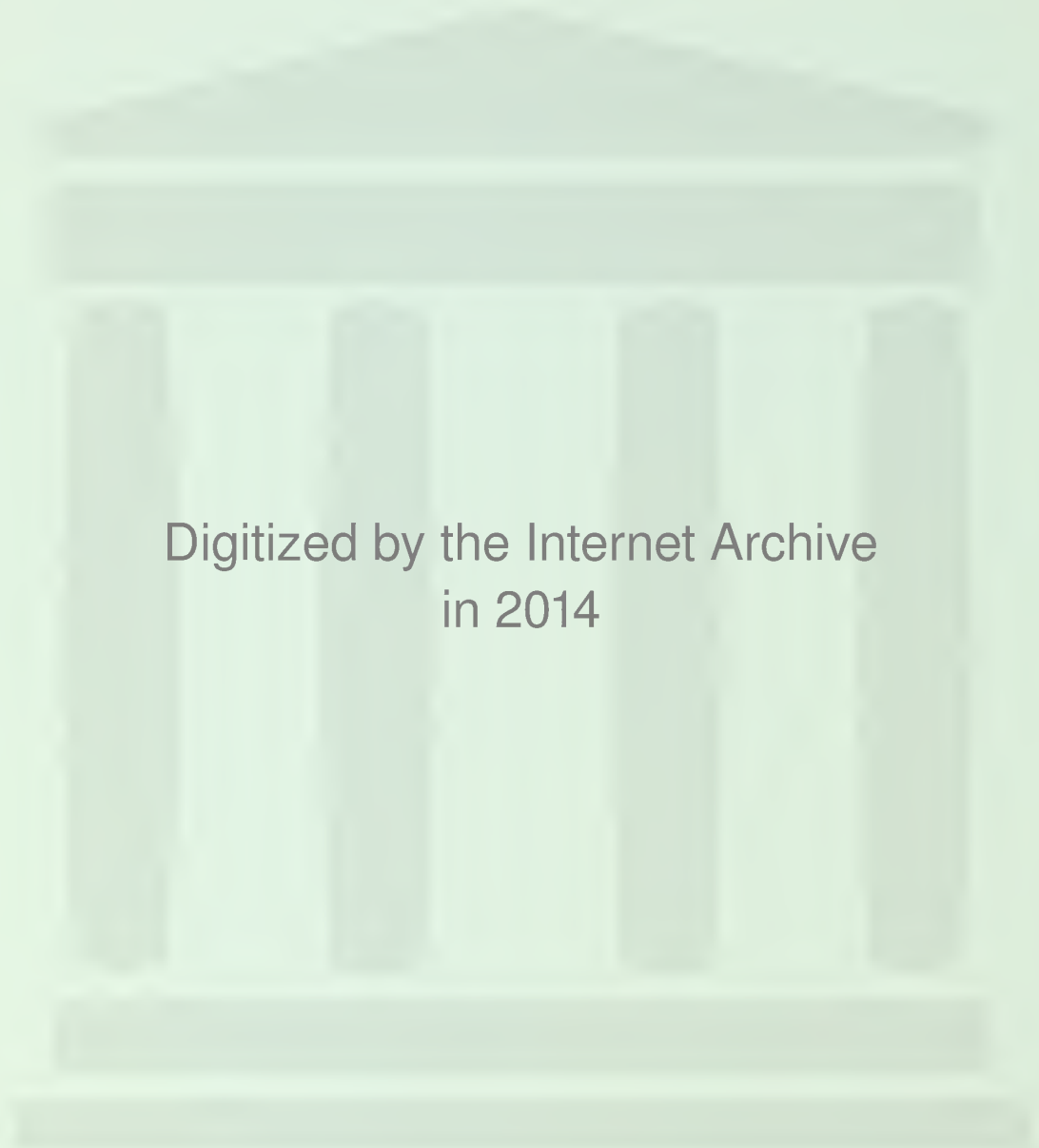
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APPENDIX A

ROLLING STOCK ISSUES

Description of MBTA Present and Projected Bus Fleet

The MBTA has a large and relatively old motor bus fleet for directly operated services, given expected vehicle life and peak vehicle requirements. The current MBTA bus fleet totals 1,037 full-sized (35 and 40 foot long) heavy duty transit vehicles (including suburban models). There are no minibuses or over-the-road coaches in the MBTA inventory. Exhibit A-1 reproduces MBTA's recent fleet inventory from Form 408 of the FTA Section 15 report. Exhibit A-2 presents the MBTA's present and projected heavy duty motor bus fleet for directly operated services. The Private Carrier, Suburban Bus, and The Ride programs have their own fleets separate from those listed here.

Exhibit A-1 is derived from the MBTA's 1992 FTA Section 15 motor bus vehicle inventory form (No. 408). This exhibit shows the number of buses in the MBTA fleet by model year and manufacturer, and also shows the average mileage for the past year and accumulatively, each by vehicle category. While this data contains errors that require correction, the most important point still holds that the fleet is old by industry standards.

Key Aspects of Exhibits A-1 and A-2

There are 3 important points contained in these 2 exhibits:

1. Peaking characteristics increase overall fleet size needs and impact operational efficiency

2. Spare Ratio - large fleet necessary to compensate for an older fleet

3. Short-Term Projected Trends

Peak Characteristics

The MBTA fleet carries approximately 100 million passengers annually on over 150 routes. In order to meet peak needs to provide service on all routes as specified, MBTA has the following vehicle requirements[1]:

* 753 buses in the a.m. peak
* 293 buses during the midday period
* 658 buses in the p.m. peak
* 133 buses during other periods

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[1] Source: MBTA Section 15 report for the 1992 report year.

Exhibit A - 1: MBTA Rolling Stock Inventory - April 93

Number of Vehicles in Total Fleet	Year of Manuf.	Manuf. Code	Model Number	Seat Capacity	Total Miles on Active Veh.	Avg. Lifetime Mileage per Active Vehicle	Avg. Mileage During Period
200	1989	TMC	ITUMDT3A	43	4,005,000	3,246,000	20,025
180	1986	GMC	T80606	40	3,895,000	2,917,000	21,639
200	1985	GMC	T80604	40	4,006,000	3,232,000	20,030
85	1982	FIL	D901	45	1,901,000	1,445,000	22,365
83	1981	FIL	D901	43	1,760,000	1,434,000	21,205
100	1980	GMC	T6H5307N	51	2,090,000	1,825,000	20,900
27	1980	GMC	T6H4523N	43	718,000	387,000	26,593
25	1979	GMC	T6H5307N	51	496,000	369,000	19,840
10	1978	AMG	9640B	50	260,000	203,000	26,000
28	1970	GMC	T6H4521A	43	492,000	460,000	17,571
19	1970	GMC	T6H5305A	45	467,000	419,000	24,579
7	1967	GMC	TDH4519	45	271,000	222,000	38,714
16	1967	GMC	TDH5303	38	300,000	267,000	18,750
36	1966	GMC	TDH5303	45	785,000	710,000	21,806
19	1966	GMC	TDH4519	38	490,000	435,000	25,789
2	1966	GMC	TDH4521	44	31,000	32,000	15,500

Total Fleet:	1,037
Total Average Vehicle Life:	10.6
Average Weighted Fleet Age:	11

Exhibit A - 2: Current and Anticipated MBTA Active and Contingency Fleet

	1993			1994					1995				
Year	Number of Vehicles	Age (years)	Extension	Number of Vehicles	Age (years)	Extension	Estimated Effective Fleet Age (b)	Extension	Number of Vehicles	Age (years)	Extension	Estimated Effective Fleet Age (b)	Extension
1995									170	1	170	1	170
1994				200	12 (a)	2400	6	1200	200	13	2600	7	1400
1989	200	4	800	200	5	1000		1000	200	6	1200		1200
1986	180	7	1260	180	8	1440		1440	180	9	1620		1620
1985	200	8	1600	200	9	1800		1800	200	10	2000		2000
1982	85	11	935	85	12	1020		1020					
1981	82	12	984	82	13	1066		1066					
1980	126	13	1638	5	14	70		70					
1979	24	13	312										
1978	0	14	0										
1970	28	15	420										
1969	2	23	46										
1967	21	23	483										
1966	4	26	104										
Total Fleet:	952			952					950				
Total Fleet Cummulative Life:			8582			8796		7596			7590		6390
Average Weighted Fleet Age:			9.01			9.24					7.99		
Estimated Effective Fleet Age:								7.98					6.73

(a) Assumes average bus age of 12 years prior to rehabilitation

(b) For rehabilitated vehicles, estimated effective fleet age is assumed to be 6 years, with 6 additional years of active service remaining

The peak to base ratio (753 : 293) is 2.6. The closer this ratio is to 1, the more cost effective it is to provide service, because more buses can remain in service throughout the day (rather than purchasing and maintaining capital equipment for a fraction of the day). The same is true for the hiring of operators and other staff, in that the greater the peaking the less efficient service usually is. Maintenance, bus storage, and overall capital needs may be reduced if the peak to base ratio is reduced through eliminating (overall or through contracting out) peak-only services.

Spare Ratio

A second important piece of information from the fleet list is the spare ratio. MBTA currently has 1,037 buses in its 1992 total fleet, including an "emergency contingency" fleet (an FTA allowed designation) estimated at 72 vehicles. These are not used to meet routine service requirements. These figures produce:

An actual spare ratio of 28.2 percent

([1,037 total fleet - 753 highest peak need in the year - 72 emergency contingency vehicles = 212] / 753 highest peak need in the year)

-- versus --

The FTA's recommended fleet size with a 20 percent spare ratio, or a total active fleet of 976 vehicles.

(753 highest peak need in year + 20% of 753 + 72 emergency contingency vehicles)

While other factors play a role here, an old fleet virtually requires owning and maintaining additional buses beyond those normally anticipated in order to meet daily service requirements, accounting for maintenance activities and backup against breakdowns.

Fleet projections in Exhibit A-2, augmented with MBTA data regarding anticipated emergency contingency fleets, indicate that the spare ratio should decrease to 20 percent in 1993 and remain stable through 1995.

Short-Term Projected Trends

Third, Exhibit A-2 shows the current and anticipated average fleet age. Based upon information received previously, Exhibit A-2 assumes that 200 rehabilitated buses are received in 1994, and 170 new vehicles are received in 1995. The accepted age (FTA) of a standard diesel powered, heavy duty motor bus is 12 years. Given a 12 year expected life, ideally the fleet age for heavy duty transit coaches should be close to 6

years, not accounting for extended life resulting from rehabilitations. The 1992 MBTA fleet age is 10.6 years, and is projected to drop to 9.0 years in 1993, and with retirement of the oldest vehicles, rehabilitation of others to 8.0 in 1994, and reach 6.5 in 1995 with the anticipated arrival of 170 new vehicles.

These rehabilitated and new vehicles represent nearly half of MBTA's peak period vehicle requirement, and shows the retirement of 457 old vehicles by 1995. Therefore, in 1995 the MBTA fleet is anticipated to shrink to 950 total vehicles.

This progression may or may not be suitable to MBTA's long term needs, given any uncertainty regarding rehabilitation and replacement vehicles anticipated 1994 and 1995, and the MBTA's long term fleet replacement strategy. Ideally, MBTA should be replacing 1/12th (8.3 percent) of the active 912 vehicle fleet each year with new vehicles (for a total of 76 vehicles annually), rehabilitating a sufficient numbers of older vehicles to maintain the 6 year old average, or some combination of the these strategies. Plans for accomplishing this past 1995 are not known at this time.

MBTA may desire to utilize its anticipated competitive procurement program to augment its fleet renewal strategy, either in the immediate, short, or long term horizons.

Options for Providing Rolling Stock

There exists 2 groups of options for supplying rolling stock for privately operated MBTA service. Group A options all involve the supplying of buses by MBTA. Group B options involve the use of private carrier buses.

The Consultant Team identified 4 options under the provision for MBTA vehicles and 2 options under the use of private carrier vehicles. In considering vehicle needs in each option, the Consultant Team assumed the FTA maximum 5 year contract period in order to make the service packaging more attractive to service providers. Assuming that service starts in spring 1994, the first package of newly contracted service would run until 1999.

It is assumed that the MBTA desires to have no vehicles older than this in the contractor's fleet. Assuming a 5-year contract initiated in 1994, a 1986 model year or newer vehicle is required, not accounting for rehabilitated vehicles or medium or light duty vehicles to meet this age standard.

The options presented here for heavy duty transit coaches are not mutually exclusive. The MBTA could decide to implement different approaches with different carriers or for different services. However, administering multiple approaches could complicate administrative, and contract monitoring needs. The options discussed in this technical memorandum are:

Group A - MBTA Supplied Buses

1. Recent model year buses (1989 model year or newer)
2. Older model year buses (1988 model year or older)
3. Mix of both recent model year and older buses (1986 model year or newer)
4. Newly purchased or rehabilitated vehicles

Group B - Private Sector Supplied Buses

1. Newly purchased buses
2. 1986 model year buses or newer

Group A Options - Overview

The A group of options involves using publicly owned vehicles for contracted MBTA services. The Competitive Services Board[2] generally recommends public ownership of vehicles used in contracted services when:

- Staff exist for administering the leasing
- The vehicles are likely to outlast the contract
- Insufficient vehicles are available among private carriers
- The vehicles are of a specialized nature
- The approach meets short and/or long term capital needs.

The options under this group involve a range of vehicle types possible for leasing. Option 1, recent model buses, would include the newest vehicles currently in the MBTA motor bus fleet, which have a life expectancy through the year 2001. They would likely entail the least maintenance issues for a private carrier. Option 2, older model year buses, would involve the leasing of vehicles with a model year of 1988 or older. Option 3, mix of both recent model year and older buses, would be a compromise of a portion of the MBTA recent model year vehicles with some private carrier rolling stock. Because recent model year buses are included, this option is able to restrict vehicle age to those that are or are newer than 1986 model year vehicles (again, not accounting for minibuses, which have shorter lives, or rehabilitated heavy duty coaches). Option 4, newly purchased or rehabilitated buses, would entail leasing buses that are not already being used by MBTA operating personnel. Depending upon the quality of the existing fleet and employee expectations, the use of new vehicles by the contractor could either have a more serious impact on MBTA employee morale or less impact. MBTA

[2] The Competitive Services Board is a Federal Transit Administration (FTA) sponsored group of public, non-profit, and private sector representatives which examines issues and provides guidance on issues related to improving the delivery of transit services.

anticipates that the use of new or rehabilitated buses by contractors would have a worse impact on MBTA employee morale than the use of existing rolling stock.

Group B Options - Overview

The second group of options involves the private ownership of vehicles used in contracting MBTA services. Private ownership of vehicles used in contracted services (purchased or leased for the service, or from the carrier's existing fleet) is the approach now used in the Suburban Bus, Subsidized Private Carrier, and a portion of "The Ride" Programs. However the degree of MBTA control of the vehicles, their operation, or their appearance is not necessarily the same as is desired from the proposed program of competitive procurement of existing MBTA-operated motor bus services.

Private carriers using their own equipment is an approach generally favored when private carriers already possess or can readily obtain the necessary vehicles, the vehicles can be used for aftermarket work, the contract period is short, and the contracting agency cannot wait for a typical public sector procurement process, or the contracting agency does not require vehicles with a large number of options, which entail custom building to highly detailed specifications.

There are two options in this group. Option 1, newly purchased buses, would require private carriers to purchase new equipment. Option 2, 1986 model year buses or newer, would mean that existing equipment could be used as long as the buses were of a 1986 model year or newer, resulting in a 12 year or less old vehicle at the end of the 5 year contract term. In both options, MBTA would be assured that at the end of a five year contract the buses would still be within their 12-year useful life.

Conceptual Assessment of Vehicle Needs for a Competitive Procurement Program

To systematically assess rolling stock options available to the MBTA for providing vehicles for contracted service, the Consultant Team made the following assumptions:

1. The bus services in consideration are currently within MBTA auspices; that is they are existing or restructured services now operated by the MBTA.

2. The MBTA's plan to purchase 170 new buses and rehabilitate 200 existing buses is assumed to occur. The column headings referring to bus model year (e.g., 1989 or newer) are direct references to MBTA's current fleet.

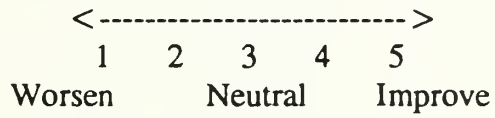
3. The MBTA seeks to utilize the most modern and reliable fleet possible in daily service to the public. All vehicles are therefore to be 12 years old or newer throughout the duration of a 5 year contract for competitively procured services.

The following discussion refers to Exhibit A-3, Conceptual Assessment of Rolling Stock Options. It is intended to outline the broad advantages and disadvantages (in 13 categories) inherent to the supply of buses in a competitive environment.

Assessment Methodology - Exhibit A-3

The ratings used in Exhibit A-3 are meant to crystalize the relative trade-offs between options. Presently, they reflect the professional judgment of the Consultant Team based on knowledge of MBTA needs, desires, and conditions. These are subject to re-evaluation based on MBTA input. Even with MBTA input, the reader is advised that the ratings are subjective and individual ratings cannot be viewed in isolation, they are simply tools to aid in evaluating options.

The Consultant Team used a scale ranking of 1 through 5 to rate how each factor would be affected under each option, as follows:



A rating of 3 indicates no change from the present - that things would stay much as they currently are. A rating or 1 or 2 indicates a worsening from present conditions, with a 1 being more severe than a 2. A 4 or 5 indicates improvement over current conditions, with a 5 being a greater improvement than a "4".

For example:

The first factor, MBTA workforce morale, is judged to be unaffected under both the private sector fleet options. Under the MBTA workforce morale factor, the leasing of late model buses is rated as a 1, while the leasing of older rolling stock and leasing of new and rehab equipment are rated as a 2. The Consultant Team judged none of the options as improving "workforce morale." Under the second factor, speed of implementation, the leasing of recent model MBTA vehicles and 1988 or older buses were judged a 4 and under the option "1989 or newer" the speed of implementation cell was rated a 5.

The following discussion of each of the 13 factors reflects the concepts behind the numbers in the rolling stock option matrix. They are neither scientific nor absolute, but reflect basic facts regarding the options and strategies, coupled with the Consultant's knowledge of MBTA's situation. The matrix is a tool to assist the MBTA assess the relative strengths and weaknesses of options in order to eventually select an option(s) for implementation. The Consultant Team advises against mathematically ranking options based upon cumulative ratings given to whole options.

Exhibit A - 3: Conceptual Assessment of Rolling Stock Options

	Contract Vehicles Supplied from MBTA Fleet				Private Sector Fleet	
Factors	Recent Model 1989 or newer	1988 or older	Mixed	New or Rehab	New	1989 or Newer
1. Workforce Morale	1	2	2	1	3	3
2. Speed of Implementation	4	4	3	2	2	4
3. Equipment Reliability	3	1	2	5	5	3
4. Federal Assistance						
a. S9 Capital	3	3	3	3	3	3
b. S9 Operating	3	3	3	3	3	3
c. S3 Capital	3	3	3	3	5	5
5. MBTA Control of Vehicle Maintenance	3	2	2	2	4	2
6. Encourage Competition	4	2	2	5	4	5
7. Aiding in meeting ADA requirements	3	3	3	3	5	?
8. MBTA Identity	3	3	3	3	2	2
9. Service Continuity	4	3	3	5	5	4
10. Financial Impact on Capital Costs	3	3	3	3	5	4
11. Impact on overall MBTA Active Fleet Age	3	3	3	3	5	5
12. Service Protection	3	3	3	3	1	1
13. Niche Markets	1	1	1	1	5	4

SCALE:	1	2	3	4	5
	worsen		neutral		improve

Note: The accompanying text is integral to understanding the table.

Base Assumptions

Supply of existing MBTA vehicles may be in 4 sub-categories, depending upon which portion of the fleet is utilized. The selection of model year cutpoints refers to MBTA's current and anticipated fleet for FY 1994, and the following assumptions.

A. A contract will be issued for service to commence in FY 94

B. The contract will be valid for up to five 5 years (the FTA maximum term)

C. At the end of the contract, no vehicles will be no older than 12 years old, per FTA criteria for the useful life of a heavy duty transit coach.

The private sector may supply rolling stock which may be new or used equipment. Above assumptions regarding fleet age at the end of an assumed 5 year contract apply. Discussion regarding mechanisms to supply the rolling stock (purchase, from current fleet, lease, etc) are not considered at this point. These will be discussed in a subsequent memo.

Explanation of Impacts

The following section explains the 14 items (rows in Exhibit A-3) which may impact the policy options (columns).

1. Workforce Morale

This item refers to the degree of potential MBTA employee (administration, management, bargaining unit) resistance to utilizing certain vehicles to operate existing or restructured MBTA services under a competitive agreement.

Resistance to use of MBTA's best or newest equipment is anticipated to be present, especially given the MBTA's current fleet situation. Private sector supply of the vehicles is anticipated to encounter less resistance, and be viewed as neutral given the assumed improvement in fleet age and condition, and the reduction of maintenance burden on the MBTA, as it would retire up to an equivalent number of its oldest or least reliable vehicles from its active fleet in this case.

2. Speed of Implementation

This item refers to the speed at which a contract could be implemented, or how long it would be until contracted service would be running.

Use of existing MBTA vehicles is the fastest method, since the vehicles already exist. Note, however, that use of older MBTA vehicles is expected to encounter skepticism from potential bidders, given the unknown condition of these vehicles.

Service commencement schedules using private sector vehicles varies based on the vehicles necessary for the service and the supply of rolling stock in the New England and national marketplaces. At one extreme, the private sector would purchase new vehicles, entailing a 3-9 month lead time from placement of the order (which would occur immediately after contract finalization). At the other extreme, suitable vehicles may be available immediately, as is often the case with minibuses, over-the-road coaches, or any vehicle currently in the contractor's fleet.

3. Equipment Reliability

This category measures the reliability of the proposed contractor's fleet to commence service according to the schedule and to maintain that service at MBTA's stated standards. The assessment is primarily dependent upon the assumed condition of the fleet, with minor consideration of who supplies that fleet.

4. Federal Assistance

This category refers to Federal Transit Administration (FTA) financial assistance available to the MBTA. Section 9 capital and operating assistance is supplied to MBTA under a standardized formula. It is not changeable in the short term. Section 3 assistance is discretionary capital funding that is traditionally allocated by FTA on a quarterly basis.

Other sources of federal financial leverage, such as Congestion Management and Air Quality (CMAQ) funding, is not considered due to long lead times. In the case of CMAQ, only new services are eligible for these funds.

Should existing MBTA vehicles be utilized for existing MBTA-operated services, there is a neutral financial impact: the vehicles have already been financed and this would not change as long as the vehicles are used for FTA-approved purposes.

Should the private sector supply vehicles for existing MBTA-operated services, then the following may occur:

Section 9 Capital - Not applicable unless MBTA holds title. If MBTA is to hold title, then the purchase must be placed in a grant and be processed. A neutral impact is anticipated, since the MBTA already utilizes 100% of its available Section 9 capital allocation and no net fleet additions are contemplated. This item is also neutral should another public sector entity successfully bid on the contract using FTA-financed equipment.

Section 9 Operating - Capital costs for items supplied by the contractor are eligible operating costs under the FTA formula. A neutral effect is anticipated, assuming that the total cost of the contracted service (capital and operating costs combined) is less than or equal to the

MBTA's current operating cost (since the capital cost is accounted for elsewhere).

Section 3 Capital - This financing mechanism is available in 2 manners. First, MBTA may receive a Section 3 grant and purchase new or rehabilitate existing vehicles itself. This would produce a net flow of funds to MBTA's services.

Second, the MBTA may utilize a special aspect of Section 3, called the Capital Cost of Contracting, to finance portion of the capital cost attributable to public transit functions under a competitive procurement method. This would produce a net flow of funds to MBTA's services.

Note that this situation is uncertain in the case of services operated under the existing subsidized Private Carrier service and Suburban Bus Program. MBTA supply of assets for these programs would be net additions to the overall MBTA fleet. Private carrier supply of the assets, however, would remain eligible for the FTA funding discussed above.

5. MBTA Control of Vehicle Maintenance

The MBTA should be concerned that all rolling stock operated by a third party meets safety, appearance, and all other standards in order to protect the public and the asset itself. The ratings in the chart reflect the relative degree of control MBTA may realistically exert over the maintenance of the vehicles, with new or rehabilitated vehicles being subject to higher degrees of control due to the known status of their condition at contract inception.

Older vehicles, especially those supplied from the MBTA's existing fleet, are of uncertain status and it is more difficult to arrive at a beginning condition assessment, as well as to assess responsibility for changes in condition.

6. Encourage Competition

This category reflects the degree to which competition for the proposed contract is encouraged. The supply of vehicles likely represents the largest cost item for potential bidders, with inherent uncertainty regarding the disposition of vehicles at the end of the contract term. Similarly, the newer the vehicle (including recently rehabilitated vehicles), the less uncertainty exists regarding vehicle condition and anticipated maintenance expenses.

MBTA supply of the new or rehabilitated rolling stock is anticipated to produce the greatest number of bidders, since the vehicles represent no capital cost to the bidder, condition may be easily assessed, and warranty coverage exists. However, private companies (and other public

entities) may have suitable fleets available for the proposed MBTA service. This may produce financial savings and reduce bidder uncertainty regarding vehicle condition. MBTA concerns regarding vehicle condition would have to be addressed in this case.

7. Aid in Meeting ADA Requirements

The assessments in this category are primarily based upon the extent to which the proposed fleet will meet the accessibility goals outlined by the federal government under the Americans with Disabilities Act's (ADA) and associated FTA regulations on public transit in general.

The assessments made in the chart reflect the ability to supply wheelchair lifts, special signage, and associated equipment with the vehicle and are primarily linked to vehicle age. Any supply of new or rehabilitated rolling stock would necessitate such equipment. Supply of pre-1990 (un-rehabilitated) vehicles, whether from the MBTA's existing fleet or elsewhere, is likely to result in rolling stock that is not fully, and perhaps not even partially, equipped per ADA.

This assessment may be combined with that in Item 13, "Address Specific Niche Markets", in that lift-equipped mini buses could be operated on a demand-response or route deviation basis in place of traditional heavy duty transit coaches. This may both supply accessible service where it is now limited, and reduce the need for complementary paratransit services due to the flexible nature of smaller vehicles.

8. MBTA Identity

The MBTA will decide on whether all privately contracted services be directly identified with the MBTA though exterior painting and lettering (known as its "livery"), route identification system, inclusion in public information documents and systems, etc. This factor evaluates the options in terms of their ability to provide identical livery, if the MBTA chooses this approach.

The current MBTA fleet, if conveyed to a contractor, is assumed to maintain its livery and all other facets, with some additional lettering denoting the actual owner and operator of the vehicle. Any vehicle supplied by a contractor of any type would receive similar treatment, resulting in the appearance of a seamless service with full identification of the MBTA as a sponsoring party.

This would be a substantial change from current practice for the services now operated under the Suburban Bus Program and Subsidized Private Carrier Service. Public education and re-appraisal of tariff schedules is anticipated if this is the case. This approach is anticipated to be sensitive to the Suburban Bus Program and Subsidized Private Carrier Program Service, in which various types of services are now operated, and local governments exercise significant control (Suburban Bus Program).

9. Service Continuity

This category considers practical considerations regarding public transit system operations as they are available to the public. MBTA's stated goal is for "seamless service" such that the riding public perceives no difference in viewing or riding a contractor-operated or an MBTA-operated vehicle.

The relative ratings shown in Exhibit A-3 reflect the thought that newer vehicles are more likely to portray seamless service in terms of current livery, farebox equipment, passenger amenities, etc. This allows, but does not create, a relatively easy transition to a truly seamless service. Seamless service at its best implies uniform fleet and staff appearance, one overall tariff schedule, overall central operations control, and uniform adherence to overall MBTA policies regarding:

Service reliability (e.g., on-time performance)

Service quality (e.g., cleanliness, seat type, seat availability)

Service quantity (e.g., maximum headways)

Service performance (e.g., passengers per hour/mile, cost)

Of course, the overall MBTA policies may differentiate these and other measures by the type of service (e.g., express v. local), environment (e.g, central city v. suburbs), potential ridership, and many other factors. This approach is anticipated to be sensitive to the Suburban and Private Carrier Program services, in which various types of services are now operated, and local governments exercise significant control (Suburban Program).

10. Financial Impact on Capital Costs

Similar to the ratings under Item 4, Federal Assistance. This category assesses the potential financial impact on the MBTA of the cost of the vehicles themselves. The 2 categories are somewhat related, but there is not a direct correlation.

Should the MBTA simply supply some portion of its existing (or planned) fleet to a contractor for use in existing MBTA-operated services, then there is a neutral (zero dollar) financial impact. This is because the vehicles are already paid for, and they do not have to be replaced with other rolling stock to enable meeting the current MBTA service plan. The net effect is to remove rolling stock from financial consideration.

However, should the contractor supply the rolling stock for existing MBTA-operated services or otherwise, an opportunity exists to secure new or newer equipment, in keeping with overall MBTA goals, at lesser cost than might otherwise be possible, for 3 reasons:

1. It is less time consuming, and therefore less expensive, to secure new or rehabilitated vehicles through a contractor than through the long public sector procurement process.

2. Section 3 Capital Cost of Contracting grants may be used to pay for the vehicles per FTA formula (80% federal, 20% non-federal matching ratio). Vehicles may be new, rehabilitated, existing in the contractor's fleet, or used but secured from another party. In each case, FTA funds will pay for up to 80% of the cost of the capital consumed in the course of supplying public transit services.

3. Vehicles may be used partly for MBTA services, and partly for other services. More efficient use of the vehicle, such as through operating charter services when the vehicle is not necessary for MBTA service, results in MBTA (and FTA and Massachusetts) paying only the costs associated with the MBTA services. Thus the MBTA may have access to newer vehicles without having to pay the full cost of those vehicles.

11. Impact on MBTA Active Fleet Age

The MBTA's current weighted average fleet age is 10.6 years, substantially above that recommended for active public transit fleets. While a program is in place to modernize the fleet through the purchase of new vehicles and rehabilitation of existing vehicles, this may not be sufficient to meet ongoing fleet modernization needs.

This category assesses the potential to lower the average age of vehicles used to provide MBTA-sponsored public transit services. Use of existing or anticipated MBTA vehicles to operate current services results in a neutral effect on fleet age. At best, vehicles are simply switched from one carrier to another. At worst, older vehicles will be kept in service past their anticipated useful life.

Given the assumptions stated above regarding contractor use of vehicles that are no older than 12 years old, competitive procurement approaches hold the potential to lower fleet age through contractor provision of heavy duty transit vehicles that are no older than 7 years old at the contract's inception, and therefore no older than 12 years at the contracts expiration. This may be accomplished with contractor provision of new, rehabilitated existing MBTA or other vehicles, or later model used equipment. These options are generally not available to the MBTA within a 1 year horizon.

12. Service Protection

Service protection is the degree to which the MBTA can guarantee that the service will be operated within the specified parameters. At worst, a contractor may default on the contract, leaving the MBTA to find a replacement operator and replacement rolling stock. At best, the service may be provided in full compliance with or exceed the terms of the contract, resulting

in no MBTA action. Some factors regarding service protection are within the operator's control, such as financial management, employee relations, etc. Others, such as "acts of God" which damage the fleet, cannot be controlled, but can only be planned for on a contingency basis. The MBTA's interest is to be reasonably certain that the promised public transit services can and will be operated in the face of uncertainty.

Regarding fleets, the highest guarantee is for the public sector to have ownership of, or direct access to, the contractor's fleet in the case of contract default. In the case of MBTA ownership, the MBTA may seize the vehicles (for cause) at any time. Direct access means that through the operating, purchase, or lease agreement the MBTA can unilaterally exercise its right to seize, commence making payments on, or assume lease payments for the equipment, respectively. Such techniques allow rapid access to the necessary fleet.

Also important is the ability to replace the contractor's fleet should a catastrophic event occur (e.g., bus storage facility burns with all buses). Given the initial scale of competitive procurement, it is anticipated that the MBTA could temporarily replace such a loss from its reserve or emergency contingency fleet. Should competitive procurement include a larger segment of the overall MBTA service plan than can be replaced with MBTA vehicles, lease of vehicles and use of other contractors may be used to replace the lost or unavailable rolling stock.

The ratings in this section reflect these approaches, indicating that the ability to replace a fleet owned by the contractor is only marginally more difficult than to face the same situation with an MBTA-owned fleet.

13. Address Niche Markets

This category addresses the MBTA's ability to supply service to niche markets, such as through the use of rolling stock that is not currently in MBTA's fleet of 35 and 40 foot heavy duty transit coaches. Niche markets may be based on rider volume (require larger transit coaches or minibuses), marketing (luxury coaches for long distance or high quality commuter services), or rider/observer perception (e.g., smaller vehicles for suburban, shuttle, or neighborhood services)

The assessments in this factor reflect the flexibility of the private sector to quickly supply the vehicles specified by the MBTA as desirable. Conversely, the MBTA may not desire to further diversify its fleet.

APPENDIX B

MAINTENANCE FACILITY OPTIONS

Introduction

If a significant amount of service is contracted to private carriers, the MBTA could potentially save a large amount of operating funds and capital funds. By contracting a large package of service, the MBTA should experience surplus garage capacity which has a value that might be unrealized if current garages go under-utilized. Another reason for exploring this issue is to increase the number of private carriers able to bid on service. As with rolling stock, by making MBTA garages available to private carriers, small companies are able to bid on service for which they otherwise might not be qualified, therefore enhancing competition. Subsequent re-competitions would also be more competitive, because a desirable facility would be available to any contractor. Larger more established carriers with local garages at capacity, and large regional and national carriers may also benefit from use of MBTA garages, and the MBTA could potentially avoid paying for additional garage facilities beyond those now in existence.

This report will:

1. Discuss several options for maintaining privately operated vehicles at MBTA garages

2. Briefly describe the 7 current MBTA garages that store motor buses

3. Discuss the range of factors affected by using MBTA garages for privately operated service.

Options

The options available to the MBTA for the provision of garage facilities for administration, operations, vehicle storage, and vehicle maintenance is both a short and long-term issue for the MBTA. For the purposes of this draft task report, "short-term" means actions which may be taken in the coming 12 months. In the short-term there are three groups of options for maintaining privately operated MBTA bus service. Group A options involve the use of a (yet to be identified) garage for use by one or more private carriers to store and maintain buses. Group B options involve the maintenance of privately operated vehicles at any number of the existing MBTA garages. Such vehicles could either be owned by the MBTA or by the private carriers. Group C, the last group is actually a single option in which private carriers maintain and store their own (or leased) vehicles at their own garages.

The options are:

Group A - Private Carrier Maintenance at an MBTA Garage

1. One private provider using a single garage
2. Multiple private providers using a single garage

Group B - Maintenance by MBTA Personnel

1. Maintain MBTA owned buses
2. Maintain private carrier buses

Group C - Private Contractors Maintain Buses in Own Garage

Group A Options

The first group of options involves shifting MBTA personnel out of a garage and freeing that facility for one or more private carriers to use it for vehicle storage and maintenance. The selection of a garage is closely tied to the number of vehicles required and secondarily to the areas those bus routes will operate in. The deadheading associated with operating all (or most) privately operated buses from a single garage means that this option relates closely to the packaging of routes.

Group A has two options because of the increased administrative difficulty of having more than a single private carrier using the same facility. Would they share personnel? Would they operate parallel organizations? Would they share equipment? How would MBTA hold multiple carriers accountable for equipment used by more than one carrier? One answer might be to have a third private party operate such a facility. In any case, the administrative issues are more complex than if a single carrier were to use an MBTA garage.

Group B Options

Group B options relate to maintenance of privately operated vehicles by MBTA personnel. This group has two options. Option 1 in this group involves MBTA staff maintaining buses owned by the MBTA but operated by private carriers. Such vehicles could also be stored at MBTA garages or at a carrier's own site. Storing such vehicles at a regular MBTA garage raises serious labor issues because of anticipated differences in wage scale and work rules.

The second option under group B is the maintenance of private carrier vehicles by MBTA personnel. The difference between this and the first option in this group is simply who owns the title and possibly the type and livery scheme of the vehicles. The major issue between these 2 options is whether MBTA labor would handle non-MBTA

vehicles with the same level of professionalism as they give regular MBTA vehicles, and the interface between those responsible for operations versus those for maintenance.

Group C Options

The last option, called group C is the common approach to contract services of having private carriers maintain their own equipment at their own facilities. Here, the free market motivating factor of self-interest helps assure that private carriers will maintain their vehicles in proper order. Depending upon the procurement process and the conditions required, the MBTA can either encourage positive benefits of self-interest or dull them. By basing compensation partly on ridership or farebox revenue, private carriers have greater incentive to maintain their equipment.

Before assessing the relative merits of these options, some background information on MBTA garages will be reviewed in order to get a better sense of the relative merits of each option.

Description of Garages

Exhibits B-1 thru B-7, Profile of MBTA Bus Maintenance Facilities, provides summary information on all 7 of the MBTA garages used for motor bus storage and maintenance. On a separate sheet, the number of vehicles assigned to each garage are listed along with the spare ratio, the total and accessible vehicle requirement by period, and maintenance labor force. This Exhibit is included at the end of this section.

The MBTA operates 7 bus garages that currently store between 88 buses at Quincy to 240 buses at the Charlestown/Somerville combination. The average number of buses at a garage is 144, with 4 garages having between 92 and 114 vehicles. MBTA states that all garages are at close to capacity and are in reasonable structural and operating condition.

Conceptual Assessment

To systematically assess the options available for maintaining privately operated MBTA service, the Consultant team made the following assumptions:

1. The following is focused on anticipated short-term MBTA actions regarding competitive procurement of MBTA-operated, and potentially Suburban Bus Program or subsidized Private Carrier Service. Long-term actions will be contemplated after Phase II of this study is completed, and a comparison of results can be made with MBTA long-term facility needs and plans.

2. The bus services in question are currently within MBTA auspices; that is they are existing or restructured services now operated by the MBTA, or potentially under the Suburban Bus Program or subsidized Private Carrier Service.

3. The MBTA plans to continue operations from its current garage facilities. No garages are scheduled for closure, either temporary or permanent, or opening within the next 6 years (1 year of planning + 5 years of contract bus operations).

4. An economy of scale is to be maintained at all MBTA-operated facilities, consistent with space, equipment, and other constraints which may exist at each facility.

5. There is little surplus at MBTA garages or similar facilities, which is available to carriers for their anticipated operations. However, the amount of service and the garage affected by selection of services to be contracted can change this assumption.

6. There are no legal impediments to leasing MBTA real property to a contractor for use in supplying public transit services. Discussions with MBTA legal staff indicate that this is the case.

The assessment is included in Exhibit B-8.

Assessment Methodology

The ratings used in the Exhibit B-8 matrix, Conceptual Assessment of Garage options, is meant to crystallize the relative trade-off among the options. As with the conceptual assessment matrix for rolling stock options, this matrix reflects established principles and the professional judgment of the team.

A scale ranking of 1 through 5 was used to rate how each factor would be affected under each option, similar to that used in the rolling stock assessment, as follows:

```
<---------------------------->
 1    2    3    4    5
Worsen      Neutral     Improve
```

The scale is from 1 to 5; 3 represents neutral or no change from the current situation; 1 and 2 represent a worsening of the current situation; and 4 and 5 represent an improvement in the current situation.

The selection of any garages closely depends upon the packaging of routes. Also, garage selection relates to rolling stock. Because these assessments are in process, the Consultant team recommends that selecting an option for maintenance should come after decisions on service packaging and rolling stock.

Exhibit B - 1: Albany Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 114

Vehicle Requirement (Spare Ratio: 34%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	85	32	51	77	0	0	0
Lift Buses:	16	14	18	17	0	0	0

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	10	10	11	10	0	0	0
Express:	5	1	4	6	0	0	0
Other:	0	0	1	0	0	0	0

Labor Requirements

Foreman:	5
Mech I:	12
Mech II:	16
Mech III:	3

Exhibit B - 2: Bartlett Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 170 *(pending update)*

Vehicle Requirements

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	91	45	78	84	20	44	22
Lift Buses:	0	0	0	0	0	0	0

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	20	19	19	19	15	16	14
Express:	0	0	0	0	0	0	0
Other:	0	0	1	0	0	0	0

Labor Requirements

Foreman:	N/A
Mech. I:	N/A
Mech. II:	N/A
Mech. III:	N/A

Exhibit B - 3: Cabot St. Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 198

Vehicle Requirement (Spare Ratio: 30%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	152	55	109	138	43	89	38
Lift Buses:	46	27	35	40	17	38	28

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	25	3	0	0	7	8	0
Express:	0	0	0	0	0	0	0
Other:	2	0	1	0	1	0	0

Labor Requirements

Foreman:	8
Mech I:	29
Mech II:	23
Mech III:	8

Exhibit B - 4: Charlestown Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 240

Vehicle Requirement (Spare Ratio: 44%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	167	70	127	148	41	95	40
Lift Buses:	56	33	41	52	20	49	29

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	9	11	11	14	16	25	15
Express:	2	0	0	0	0	1	0
Other:	1	0	1	0	0	0	0

Labor Requirements

Foreman:	8
Mech I:	34
Mech II:	23
Mech III:	9

Exhibit B - 5: Fellsway Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 92

Vehicle Requirement (Spare Ratio: 28%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	72	27	50	61	0	0	0
Lift Buses:	17	9	17	16	0	0	0

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	23	17	19	19	0	0	0
Express:	2	0	0	2			
Other:	1	0	1	0			

Labor Requirements

Foreman:	4
Mech I:	11
Mech II:	9
Mech III:	3

Exhibit B - 6: Lynn Garage
Profile of MBTA Bus Maintenance Facilities

Vehicles Assigned to Garage: 107

Vehicle Requirement (Spare Ratio: 37%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	78	30	53	69	10	28	13
Lift Buses:	26	14	17	22	6	9	6

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	21	17	17	21	10	13	11
Express:	5	0	0	5	0	0	0
Other:	2	0	1	1	0	0	0

Labor Requirements

Foreman:	5
Mech I:	12
Mech II	12
Mech III:	4

Exhibit B - 7: Quincy Garage
Profile of MBTA Bus Maintenance Facilites

Vehicles Assigned to Garage: 88

Vehicle Requirement (Spare Ratio: 29%)

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Total Buses:	68	23	62	65	9	30	13
Lift Buses:	28	20	22	26	6	11	6

Total Routes

	A.M. Peak	A.M. Base	P.M. Base	P.M. Peak	Late	Sat. Peak	Sun. Peak
Local:	20	18	20	19	9	22	11
Express:	0	0	0	0	0	0	0
Other:	2	0	1	0	0	0	0

Labor Requirements

Foreman:	5
Mech I:	11
Mech II:	10
Mech III:	4

Assessments of Options

The following discussion refers to Exhibit B-8, Conceptual Assessment of Garage Options. It is intended to outline the broad advantages and disadvantages (in 10 categories) inherent to the supply of motor bus services in a competitive environment. Five garage options are presented: they apply to all existing facilities in general.

1. Workforce Morale

This item refers to the degree of potential MBTA employee (administration, management, bargaining unit) resistance to utilizing a garage or portion thereof for maintenance of vehicles which are not operated by MBTA employees. To some degree, the amount and degree of MBTA employee morale impacts is dependent upon staffing changes to workers, and especially to skilled maintenance, operations, and administrative employees.

Resistance (by MBTA and contractor employees) to use MBTA's garages for both MBTA and contractor services is judged to be so high that it is not suggested as an option based on experiences elsewhere. Such mixing of work forces, with the added mix of drivers and maintenance staff is inherently difficult.

Multiple contract providers based at one MBTA facility is viewed as difficult in general, and nearly impossible if the vehicles are maintained by MBTA employees due to multiple employers and decision making with various goals.

MBTA employee resistance to MBTA maintenance of rolling stock operated by contractors is suggested to be difficult, but potentially achievable, based upon small scale contract operations in other areas. These, however, primarily involved tasks not traditionally viewed as transit agency work, such as taxi, paratransit, and minibus operations, or in situations where a leasing company both supplies and maintains the vehicles.

The impact on both MBTA and contractor employee morale is least affected in situations where the operations, maintenance, and other functions of one party are physically removed from others. This was assessed to be neutral, although some initial problems should be anticipated.

2. Administrative Complexity

This category assesses the degree of MBTA difficulty in administering a facility which services one or more providers within the 5 options presented. From a purely administrative perspective, multiple carriers based at an MBTA facility and MBTA maintenance of contractor-operated vehicles is viewed as difficult, primarily due to a mixing of workforces, work rules, procedures, and supervisors. Maintenance and operations should function as a team, and divisions by employer and/or job function make this far more difficult.

Exhibit B - 8: Conceptual Assessment

Factors	*No. of Carriers at MBTA Facility*		*MBTA Maintenance*		*Contractor Maintenance*
	1 Provider	Multiple Providers	T Buses	Carrier Buses	
1. Workforce Morale	1	1	2	1	3
2. Administrative Complexity	2	1	2	1	3
3. Maintenance Performance	1	1	2	1	3
4. Federal Assistance					
a. S9 Capital	3	3	3	3	3
b. S9 Operating	3	3	3	3	3
c. S3 Capital	3	3	3	3	3
5. MBTA Control of Equipment & Facilities	2	1	2	2	3
6. Encourage Competition	4	4	3	1	3
7. Deadhead Impact	2	2	2	2	4
8. Financial Impact on Capital Costs	3	3	3	3	?
9. Service Protection	3	3	3	3	2

SCALE:	1	2	3	4	5
	worsen		neutral		improve

Note: The accompanying text is integral to understanding the table.

MBTA administration of a contractor's facility (either owned or leased by the contractor; may be a MBTA site at which no MBTA operations are based) for vehicle maintenance is viewed as neutral, although suburban locations may make this more inconvenient for site visits.

From a procurement process and evaluation viewpoint, any approach other than contractor supply of garages, or complete turnover of a facility to a single contractor is viewed as substantially complicating the procurement process.

3. Maintenance Performance

This category assesses the relative merits of the 5 basing options with regard to the quality of maintenance to be performed. Similar to factor 1. Workforce Morale, the options and ratings are such that negative impacts are viewed as workforces, operations, and maintenance responsibilities are mixed across operators.

Contractor maintenance of the vehicles is preferred as neutral, and potentially positive, depending upon constraints now experienced by MBTA. Examples of constraints that may be alleviated include: inadequate space or equipment, work rules, deadhead miles/hours, and needs to transport employees from one facility to another on a continual basis.

4. Federal Assistance

This category refers to Federal Transit Administration (FTA) financial assistance available to the MBTA. Section 9 capital and operating assistance is supplied to MBTA under a standardized formula. It is not changeable in the short term. Section 3 assistance is discretionary capital funding that is traditionally allocated by FTA on a quarterly basis.

Other sources of federal financial leverage, such as Congestion Management and Air Quality (CMAQ) funding, is not considered due to long lead times, and in the case of CMAQ, only facilities supporting new services are potentially eligible for these funds.

Facilities supporting permanent large scale operations are often owned by the public sector, as they existed but were surplus to transit agency needs (already paid for but could be made productive), or were constructed or acquired to support services that were in areas distant from existing transit agency facilities.

Should existing MBTA garages be utilized for servicing contractor-operated bus services, no capital impact is anticipated. Additionally, Section 3 funds may be utilized to assist in the construction or lease/buy back of additional facilities. However, the lead time for justifying new permanent garage facilities is anticipated to be beyond the scope of the immediate competitive procurement plan. Future MBTA facility plans may take the following factors into consideration, assuming a successful contracting function.

Section 9 Capital - Not applicable unless MBTA will hold title. If MBTA is to hold title, then the purchase must be placed in a grant and be processed. A neutral impact is anticipated, since the MBTA already utilizes 100% of its available Section 9 capital allocation. This item is also neutral should another public sector entity successfully bid on the contract using FTA-financed facilities.

Section 9 Operating - Capital costs for items supplied by the contractor are eligible operating costs under the FTA formula. A neutral effect is anticipated, assuming that the total cost of the contracted service (capital and operating costs combined) is less than or equal to the MBTA's current operating cost (since the capital cost is accounted for elsewhere).

Section 3 Capital - This financing mechanism is available in 2 manners. First, MBTA may receive a Section 3 grant and purchase new or rehabilitate existing facilities itself. This would produce a net flow of funds to MBTA.

Second, the MBTA may utilize a special aspect of Section 3, called the Capital Cost of Contracting, to finance a portion of the facility's capital cost attributable to public transit functions under a competitive procurement method. This would also produce a net flow of funds to MBTA's services.

Note that this situation is uncertain in the case of services operated under the existing subsidized Private Carrier Service and Suburban Bus Programs. MBTA supply of assets for these programs would be net additions to overall MBTA holdings. An economy of scale is doubtful, given that the current carriers in these programs are able to apportion their facility costs to other (non-MBTA) services. Private carrier supply of a facility, however, would remain eligible for the FTA funding discussed above, subject to FTA scrutiny regarding new or replacement fixed facilities.

5. MBTA Control of Equipment and Facilities

The assessments in this category reflect the operational control the MBTA may exert over a facility under the 5 scenarios. Similar to the previous four categories, MBTA practical control is diluted when multiple operators or bus fleets of multiple owners are maintained in a facility.

Contractor maintenance of the rolling stock it operates is considered neutral regardless of who owns the site, since various safeguards may be included in purchase and lease agreements, and the MBTA will have unlimited visitation rights to ensure proper facilities, vehicle maintenance and operations. While the MBTA will have limited operational control, inclusion of certain

minimum facility criteria in the bid evaluation process should ensure that MBTA interests and concerns are adequately addressed at minimum financial cost.

6. Encourage Competition

This category reflects the degree to which competition for the proposed contract is encouraged. The supply of facilities represents a large cost item for potential bidders, and may limit real competition for smaller blocks of service to those carriers with existing facilities located in the service area. Conversely, larger blocks of service generate their own economy of scale, and suitable garage and operational facilities are usually not difficult to locate.

While the MBTA supply of MBTA maintenance facilities and MBTA-owned vehicles may encourage competition, some potential bidders may view this negatively. In such a situation, some carriers may base a bid/no bid decision upon MBTA labor issues and administrative complexity issues covered in items 1 and 2, above, rather than supply of the garage. Another possible response is that potential bidders are likely to adjust their price bids based upon their assessment of risk and administrative expenses.

Assuming a service with reasonable economy of scale, contractor supply of the facility is at worst considered neutral, and at best considered to encourage competition during the first round of competitive contracting. Subsequent rounds of contracting, however, may be different, as the contractor holding a preferred facility or site is likely to be viewed as having an inherent financial, start-up phase, and operational advantage over newcomers. In such cases, the MBTA should seriously consider turning over existing facilities to contractors on a lease basis, or constructing new facilities to be owned by the MBTA.

7. Deadhead Impact

Facility location decisions have a significant impact on operational costs due to deadheading to and from the facility to commence and end a bus run. Absent a final appraisal as to the routes identified as preferred for competitive procurement, this assessment cannot be made with a degree of certainty.

Overall, however, limitation of operations to specific sites would eliminate opportunities to reduce existing deadhead mileage/hours, and may increase it. This is especially the case with services outside the core MBTA service area.

Accordingly, contractor supply of a facility is assessed a higher likelihood for positive impact, while use of existing MBTA facilities is assessed as having a negative impact.

8. Financial Impact on Capital Costs

Similar to the ratings under Item 4, Federal Assistance. This category assesses the potential financial impact on the MBTA for the cost of a facility itself. The two categories are somewhat related, but there is not a direct correlation.

Should the MBTA simply supply some portion of its existing (or planned) facilities to a contractor for use in operating MBTA services, then there is a neutral (zero dollar) financial impact. This is because the asset is already paid for, and it does not have to be replaced to meet current MBTA service plans. The net effect is to remove the facility from financial consideration, assuming the remaining MBTA facilities are capable of handling any additional vehicles without increased capital or operating cost.

Should the contractor supply the facility for existing MBTA-operated services or otherwise, an opportunity exists to secure new, newer, or better located facilities, in keeping with overall MBTA goals, at lesser cost than might otherwise be possible, for 3 reasons:

1. It is less time consuming, and therefore less expensive, to secure new or rehabilitated facilities through a contractor than through the long public sector procurement process. However, FTA approval of the sites is likely necessary if federal *capital* funds are involved, and this may entail a process more time consuming than is acceptable for the short term competitive program.

2. Section 3 Capital Cost of Contracting grants may be used to pay for assets per FTA formula (80% federal, 20% non-federal matching ratio). Assets may be new, rehabilitated, existing in the contractor's inventory, or simply secured from another party. In each case, FTA funds will pay for up to 80% of the cost of the capital consumed in the course of supplying public transit services.

3. Facilities may be used partly for MBTA services, and partly for other services. More efficient use of the facility, such as through support of charter or intercity operations results in MBTA (and FTA and Massachusetts) paying only the capital costs associated with the MBTA services. Thus the MBTA may have access to new facilities or locations without having to pay their full cost.

9. Service Protection

This item assesses the degree to which the MBTA can guarantee that the services operated from a facility will be operated within the specified parameters. At worst, a contractor may default on the contract, leaving the MBTA to find a replacement operator and a replacement facility. At best, the service may be provided in full compliance with or exceed the terms of the contract, resulting in no MBTA action. Some factors regarding service protection are within the operator's control, such as financial management, employee relations, etc. Others, such as Acts of God which damage or destroy the facility, cannot be controlled, but can only be planned for

on a contingency basis. The MBTA's interest is to be reasonably certain that the promised public transit services can and will be operated in the face of uncertainty.

The highest degree of service protection regarding facilities is for the MBTA to own the facility and lease it to the contractor for the duration of the contract. This ensures that no matter what may occur, the MBTA can always revert to operations from the facility, or contract those operations to another party to operate from the facility.

However, other factors should be considered. The MBTA currently has [1] adequate facilities to service and store vehicles regardless of circumstances, and [2] sufficient numbers of potential contractors to take over should one contractor default. Additionally, the MBTA may specify that any facility leased by the contractor will be assumable by the MBTA in the case of default. This ensures MBTA access to the facility without an initial capital cost, but with a potential future operating cost.

The ratings in this section reflect these approaches, indicating that the ability to replace a facility owned by the contractor is only marginally more difficult than to face the same situation with an MBTA-owned facility given the short term plans for the competitive program. Should the competitive program develop to a large scale (e.g., >100 fixed route vehicles in one area, or more than approximately 200 fixed route vehicles overall), then MBTA ownership of facilities may become warranted to protect the service and to encourage long-term competition.

APPENDIX C

EXISTING PRIVATE CONTRACTING ASSESSMENT

Introduction

The MBTA administers 3 private carrier bus programs, each are operated and subsidized in a different way. The Interdistrict Transportation Services (IDTS) is a program providing bus transportation, usually express routes, from communities outside the MBTA district into the district. Subsidies for these services are reimbursed by EOTC. The Subsidized Private Carrier Service is subsidized and administered by the MBTA. The Suburban Bus Program is subsidized by the MBTA and administered by the municipalities in which the services are located. Because they are directly subsidized by the MBTA, these last two programs are the focus of this Appendix, which includes the following elements:

1. Synopsis of service
2. Performance standards
3. Insurance
4. ADA issues
5. Franchise rights
6. Contract procedures

1. Synopsis of Service

The two private carrier bus programs described below differ in the way they are subsidized and managed. The Subsidized Private Carrier Service is funded entirely and directly by the MBTA and provides fixed route local service to areas within the MBTA District that are not served by other MBTA services. This program is presently administered within the Railroad Operations Department.

The Suburban Bus Program grew out of service provided by private carriers before the MBTA was created. It is administered by the cities and towns in which it operates and receives up to $80,000 annually per community. Support is provided by the Passenger Service Planning Office.

Subsidized Private Carrier Service

There are currently 6 services under this program which receive direct subsidies from the MBTA: Hull-Hingham; Winthrop; Salem-Peabody; Medford; Stoneham; and Canton-Mattapan.

These services had previously been operated by private carriers without a subsidy. None of the services were instituted by the MBTA. The service provided by this program varies from high - frequency feeder bus service in Winthrop to shuttle service in Peabody and Salem, to express bus service from Stoneham to Boston. With the exception of Winthrop, service levels are lower than most MBTA bus routes.

Subsidized Private Carrier Service Levels			
Service	**Carrier**	**Days**	**Frequency**
Hull-Hingham	People Care-iers	Weekdays Saturdays	A.M.:45 mins. Midday: 60 mins. P.M.: 60 mins. 60 mins.
Winthrop - East Boston	Paul Revere	Weekdays Saturdays Sundays	A.M.: 7 1/2 mins. Midday: 20-25 mins. P.M.: 7 1/2 mins. 15-20 mins. 40 mins.
Salem-Peabody	Michaud	Weekday, Saturday	Midday: 60 mins.
Fulton Street (Medford)	Hudson	Weekday Saturday	A.M.: 30 mins. Midday: no service P.M.: 30 mins. A.M.: 2 trips Midday: no service P.M.: 30 mins.
Canton-Mattapan	Hudson	Weekday Saturday	A.M.: 60 mins. Midday: no service P. M .: 60 mins. A.M.: 1 1/2 trips Midday: no service P.M.: 60 mins.
Stoneham-Boston	Hudson	Weekday	Irregular

Source: MBTA Advisory Board Service Committee, *Private Carrier Bus Service*

Fares and Subsidies

The fare structure for this program bears no relationship to MBTA fares for comparable trips. The service did not follow the restructuring in 1991 of MBTA bus fares when the base fare was raised to $0.60 and the zones were lengthened. The fares and service levels are correlated by the corridor. Any changes proposed by the carrier must be approved by the MBTA.

A maximum daily subsidy is set by the contractor's bid price. In the past, revenue generated above the guaranteed minimum was split, half going to increase the carrier's profits, and half to reduce the MBTA subsidy payment. Currently, starting with the Winthrop service, additional

revenue beyond the guaranteed revenue is retained by the carrier to provide incentive to increase ridership. This formula creates diverse levels of subsidy due to the various types of service provided. For example, Winthrop, which provides high-frequency feeder service receives the highest subsidy, while service in Peabody-Salem, which is essentially a shoppers' shuttle with less frequent service, receives the lowest subsidy. The net cost of private carrier service has been steady over the last several years because it has been capped.

Contract Terms

The terms of contract agreements for subsidized private carriers are for a period of 3 years. Contracts commence on July 1 and end on June 30. The MBTA maintains a mailing list of private contractors who receive all RFP's. Attached to this memo is the mailing list used by the MBTA in issuing RFP's.

Subsidized Private Carrier Service Fares

Service	Carrier	Trip	Length	Fare
Hull-Hingham	People Care-iers	Intra-Hull Hull-Hingham	<6.2 mi. <8.7 mi.	$0.50 $0.75
Winthrop-East Boston	Paul Revere	Intra-Winthrop Feeder serv. to Orient Hgts. Bl Line	1-3 mi.	$0.75
Salem-Peabody	Michaud	Intra-Salem Intra-Peabody Salem-Peabody	<5.3 mi. <6.7 mi. <10 mi.	$0.75 $0 75 $1.50
Fulton-Street	Hudson	Fulton-Medford Sq. Medford Sq. Mall Fulton-Mall	<2.1 mi. <1.5 mi. <3.6 mi.	$0.50 $0.50 $0.75
Canton-Mattapan	Hudson	Within 1 town Canton-Milton or Milton-Mattapan Canton-Mattapan	<5.3 mi. <8.6 mi. <8.7 mi.	$0.50 $0.75 $1.00
Stoneham-Boston	Hudson	Stoneham-Medford Stoneham-Boston Medford-Boston	N/A	N/A

Source: MBTA Advisory Board Service Committee, *Private Carrier Bus Service*

Other Requirements

The MBTA requires contractors to supply and maintain all vehicles. They must also secure street permits and operate in full compliance with the safety and inspection requirements of the Mass. Department of Public Utilities (D.P.U.) and all other Rules and Regulations of the D.P.U. pertaining to bus operations. D.P.U. bus permits for each vehicle are appended to the contract.

Carriers must submit monthly reports showing total passengers carried and passenger revenue collected on a daily basis for each day of operation for the term of the contract. Monthly reports of any occurrences that are at variance with normal operating conditions must also be submitted.

Required attachments to the contract include:

- Service and Fare Schedules and Route Descriptions
- Vehicle Use
- Daily Subsidy Cost
- D.P.U. Permits for Vehicles
- Certificate of Insurance
- Accessibility Plan (for ADA compliance)
- Operator Recruitment and EEO/M Plan
- Marketing Plan

Suburban Bus Program

The Suburban Bus Program operates as a partnership between the MBTA and the 11 cities and towns in which the services are operated. The MBTA provides the subsidy to the community, which in turn contracts out for service or operates the service directly. It therefore differs from the Subsidized Private Carrier Service in that it is controlled at the local level by the cities and towns, rather than the MBTA.

The MBTA pays annual subsidies based on operating expenses of each program which are reported monthly by the carriers. Sixty-five percent of the net cost of service, with a cap of $80,000, is paid by the MBTA. However, since the communities pay for a portion of MBTA service through local MBTA assessments, the cost sharing works out to about a 50/50 split.

The choice of communities for this program is competitive in that when the MBTA has made monies available for expansion of the program, communities are required to submit bids. Subsidies are awarded up to the limit of available funding.

Currently, 11 communities are served under the Suburban Bus Program: Bedford; Beverly; Burlington; Dedham; Framingham; Lexington; Lynn; Mission Hill (Boston); Natick; Needham

(service currently suspended pending study of future options); and Norwood. A schedule of Suburban Bus Program statistics is included in Exhibits Supporting Appendix C.

2. Performance Indicators

The MBTA uses 5 performance indicators to assist in monitoring service: cost/vehicle mile; cost/vehicle hour; passengers/vehicle mile; gross cost/passenger; and subsidy/passenger. The private carrier routes perform as shown on the table below (Stoneham service not presented due to lack of available data for FY 91). Data necessary for compilation of all items was not immediately available.

Private Carrier Performance - FY 91

Route	Daily Passengers	Passengers Per Hour	Passengers Per Mile	Passengers Per Trip	Subsidy/ Passenger
Salem-Peabody	131	11	1.07	19	$1.99
Hull	210	19	0.95	17	$1.87
Winthrop	2275	30	3.12	17	$0.95
Fulton St.	85	12	0.66	5	$4.20
Canton	95	10	0.59	12	$3.41

Source: MBTA Advisory Board Service Committee, *Subsidized Private Carrier Service*

The Subsidized Private Carrier Service contractors are required to report the following information to the MBTA:

- Total daily passengers;
- Weekly reports of significant occurrences including trips added or dropped, delays or changes in schedule, and vehicle and passenger accidents;
- Monthly reports of trips not operated on-time, including the cause of delays.

This information, together with monthly costs and minimum revenues set forth in the contract, are used to calculate the subsidy payments, and also to measure the performance indicators listed above. This information has also been used to calculate performance penalties and incentives as specified in some contracts. It is not clear what, if any, consequences these measures have

on contractors, since the existing services under the program have changed very little since first subsidized by the MBTA.

3. Insurance

Insurance requirements for the Subsidized Private Carrier Program include public liability and property damage insurance covering operations in the amounts of $5 million for injury to or death of any person, including passengers, and persons, including passengers in any one accident. The contractors must provide a certificate of insurance with the MBTA named as additional insured. Carriers subsidized by EOTC under the IDTS program have similar insurance requirements.

No Suburban Bus Program contracts were available to the contractor, since these are administered by the municipalities in which they operate; however, an assumption is made here that the requirements are no higher than the Subsidized Private Carrier Service and the IDTS program and may be lower.

4. ADA Issues

The ADA Transportation Requirements for non-rail fixed route service are set forth as follows:

> "Vehicles purchased or leased after August 25, 1990, must be accessible. Vehicles remanufactured to extend their useful life by five (5) years or more must be made accessible to the maximum extent feasible. Before buying or leasing used vehicles which are not accessible, a "good faith effort" must be made to locate accessible vehicles. Comparable paratransit service must be provided to persons unable to use the fixed route system."

Contractors subsidized by the MBTA must comply with these ADA regulations since they are providing public transportation. If less than 100% of vehicles are accessible, the contractor must establish a Call-A-Lift Program which allows passengers to schedule their trip by 1:00 p.m. the day before they will actually take the trip. This is similar to the program for MBTA-operated fixed route bus service. A survey performed by The RIDE last year indicated that almost all privately owned bus companies had some percentage of lift-equipped equipment.

The contractor must also develop and implement a marketing plan that will inform the disabled community of the operator's accessible service. Other requirements include an emergency plan detailing backup plans in case of breakdowns of lift-equipped buses carrying passengers requiring the lift, driver training, both operational and sensitivity, as well as maintenance personnel training.

If a new route is established by the MBTA, either through contracting or MBTA direct service, accessible service must be made available. In examining opportunities for future contracted bus service, this requirement must be taken into consideration. The RIDE office reports that

MBTA-contracted carriers will contact The RIDE and work out arrangements for The RIDE to provide them with paratransit service. Attached to this appendix is a map of The RIDE Service Area. In any event, contractors wishing to provide fixed route service must coordinate the paratransit service requirements with the MBTA.

5. Franchise Rights

Chapter 161A of the General Laws of Massachusetts sets forth the powers and limitations of the MBTA. Section 3 grants the MBTA exclusive rights to provide transit services within the MBTA district, including the power to regulate entry, exit, and service levels of un-subsidized carriers as well as to subsidize private carriers and directly operate service. Section 5(k), however, imposes certain constraints upon the MBTA. In particular, whenever the MBTA desires to add new routes for service in any area, it is required to grant preference to the private carrier then servicing the area in the operation of those routes. In addition, Section 14 grants the MBTA the right to freely operate any route substantially similar to one operated by the MTA, predecessor to the MBTA. Section 14 also states that the MBTA must provide compensation to private carriers should the MBTA operate a route not formerly operated by the MTA.

These regulations have been a constraint in any competitive bidding process. However, recently Hudson Bus Lines surrendered their operating rights so the MBTA can now initiate a competitive bidding process.

The RIDE

The RIDE is the MBTA's paratransit service and is administered by the MBTA's Office of Transportation Access. While this service is not fixed-route, but totally demand-response, it is worth examining in the context of a highly successful contracted service already provided by the MBTA. Due to the nature of the service, the subsidy is very high, but the administration of the program by the Office of Transportation Access has evolved into a very efficient one.

The RIDE started service in Boston, known as the Core Area, in 1977. In 1987 the MBTA made a commitment to take The RIDE to all 78 cities and towns in the district. Currently The RIDE serves 44 communities in 7 service areas. Determination of need is based on population derived from census data.

Contractors must have a mix of MBTA-supplied lift-equipped vans (currently 120) as well as contractor vehicles, which range from low-floor vans to sedans and station wagons. No minibuses are used. All carriers maintain both their own equipment and MBTA owned vehicles that they operate.

The Ride services do not require DPU and street licenses. Contractors are only required to have Class 3 licenses. MBTA vehicles must be dedicated to The RIDE service. Only one contractor,

located in the Core Area, has only MBTA vehicles. Contractor facilities range from an office with a phone (taxi service), to offices with parking areas, to office/garage facilities.

In the past the insurance and training criteria set forth by The RIDE have limited the number of vendors, although that number is growing. Proposals are evaluated not only on a summary per passenger cost basis, but also on operations cost for MBTA vehicles. Contracts have been let with both new and used vehicles, but contractors must have both MBTA and their own vehicles to provide the level of service The RIDE requires.

Patrons interface directly with contractors for scheduling and taking trips, but buy books of tickets from The RIDE. Each one-way ride is $1.00, and tickets are required for every ride. Contractors turn in the tickets monthly. This serves as a basis for payment and performance, and also provides a good audit trail.

The 1992 system-wide average cost per trip is $22.92. Most recent ridership data shows a total of 458,000 trips/year with 21,000 riders. The RIDE estimates that within 2 years there will be well over a million trips per year. This is due to the fact that previously The RIDE only accepted patrons who were residents of the towns served. ADA has eliminated that requirement, thereby making the service available to anyone who requires it, regardless of residency. In addition, ADA has significantly broadened the definition of disability, causing many social service agencies to look to The RIDE to provide their transportation needs. Currently, MBTA officials state that The RIDE can't provide all the trips requested. ADA currently allows 5% of ride requests not to be served, but that percentage will decrease to the point where all requests must be honored, according to the federal law and MBTA's plan to comply with it.

Additional Supporting Information

The following additional information is supplied in the appendix.

Mailing list for private carrier RFP's
Table of Suburban Bus Program Information
(town/local sponsor, contractor, compensation, term, service level, fare structure)
The RIDE service map

Exhibits Supporting

APPENDIX C

MAILING LIST FOR PRIVATE CARRIER RFP

Mr. Peter Benton
Airways Transportation
160 Gainsborough St.
Boston, MA 02116

Mr. Donald N. Dunham
A Yankee Line
370 West First St.,
S. Boston, MA 02127

Mr. Richard Brown
Alternate Concepts
99 Summer St.
Suite 1430
Boston, MA 02110

Mr. John Medeiros
American Eagle Motor Coach, Inc.
72 Sycamore St.,
Fairhaven, MA 02719

Mr. Richard J. Dow
Boston Double Deckers, Inc.
321 Washington Street
Somerville, MA 02143

Mr. James Basler
Argenbright Transportation
144 Maverick St.
East Boston, MA 02128

Mr. David Boutros
94 Patriot Parkway
Revere, MA 02151

Mr. Michael Aspell
Braintree Livery Serv.
100 Messina Drive
Braintree, MA 02184

Mr. Robert Bowes
Charter Buses Inc.
203 Faluah Rd.
Fitchburg, MA 01420

Mr. Lawrence Anzuoni
Brush Hill
109 Norfolk Street
Boston, MA 02124

Mr. Dean Weeks
Clinton Area Transit
72 Summit Street
Clinton, MA 01150

Mr. John Mason
Bus Corp.
35 Mt. Hood Terrace
Melrose, MA 02176

Crystal Trans., Inc.
Ms. Linda Carrol
77A Guest Street
Brighton, MA 02134

Mr. James M. Jalbert
C & J Trailways
P.O. Box 190
Dover, NH 03820

Mr. Michael Martinex
DBD Travel
21 Laure Keen Avenue
Achushnet, MA 02743

Mr. Herb Glover
8 Harvard Park
Dorchester, MA 02124

Ms. Joan Libby
Cavalier Coach Corp.
415 Mystic Ave.
P.O. Box 318
Medford, MA 02155

Mr. Jack Dwyer
JSC Transportation Service
3 Dunham Road
Billerica, MA 01852-5728

Mr. Mark Bloom
Ms. Rosilland Weiss
H&L Bloom, Inc.
10 Oak Street
Taunton, MA 02780

Hub Bus Lines
24 Thorndike Street
East Cambridge, MA 02141

Mr. Kenneth Hoggard
Hudson Bus Lines
70 Union Street
Medford, MA 02155

Mr. Richard Unda
Interstate Coach
1139 Washington Street
Stoughton, MA 02072

J.A. McDonough
McGinn Bus Company
36-38 Alley Street
Lynn, MA 01901

Mr. Michael McCoy
People Care-eirs
P.O. Box 541
Hingham, MA 02043

Mr. Paul Picknelly
Peter Pan Lines, Inc.
P.O. Box 1776
1776 Main Street
Springfield, MA 01102-1776

Mr. John F. Deacon
Metro Bus
333 Longwood Avenue
Boston, MA 02155

Mr. Gig Michaud
Michaud Bus Lines, Inc.
61-63 Jefferson Avenue
Salem, MA 01970

Mr. George Anzuoni
Plymouth & Brockton Street Railway Co.
8 Industrial Park Road
Plymouth, MA 02360

Mr. Steve Bauld
Mini Coach of Boston
40 Canal Street
Medford, MA 02155

Mr. Samuel Graham
Reliable Bus Lines
978 Nash Road
New Bedford, MA 02746

Mr. Tom Davis
Roberts Transportation
P.O. Box 786
Peabody, MA 01960

Mr. Cabot Smith
The Coach Company
P.O. Box 423
Plaistow, NH 03865

Mr. Joe O'Shea
Green Harbor Transportation
P.O. Box 623
Green Harbor, MA 02041

Ms. Deborah S. Sloyer
City Transportation
Colonial Tours
390 Stuart St.
Box 1459
Boston, MA 02117

Mr. Peter Wilson
Wilson Bus Lines
Main St.
East Temple, MA 01438

Mr. Tom Carey
Careys Motor Transportation
305 Temple St.
Whitman, MA 02382

Mr. Jim Trombly
Trombly Commuter Lines
1480 Broadway Rd.
Dracut, MA 01826

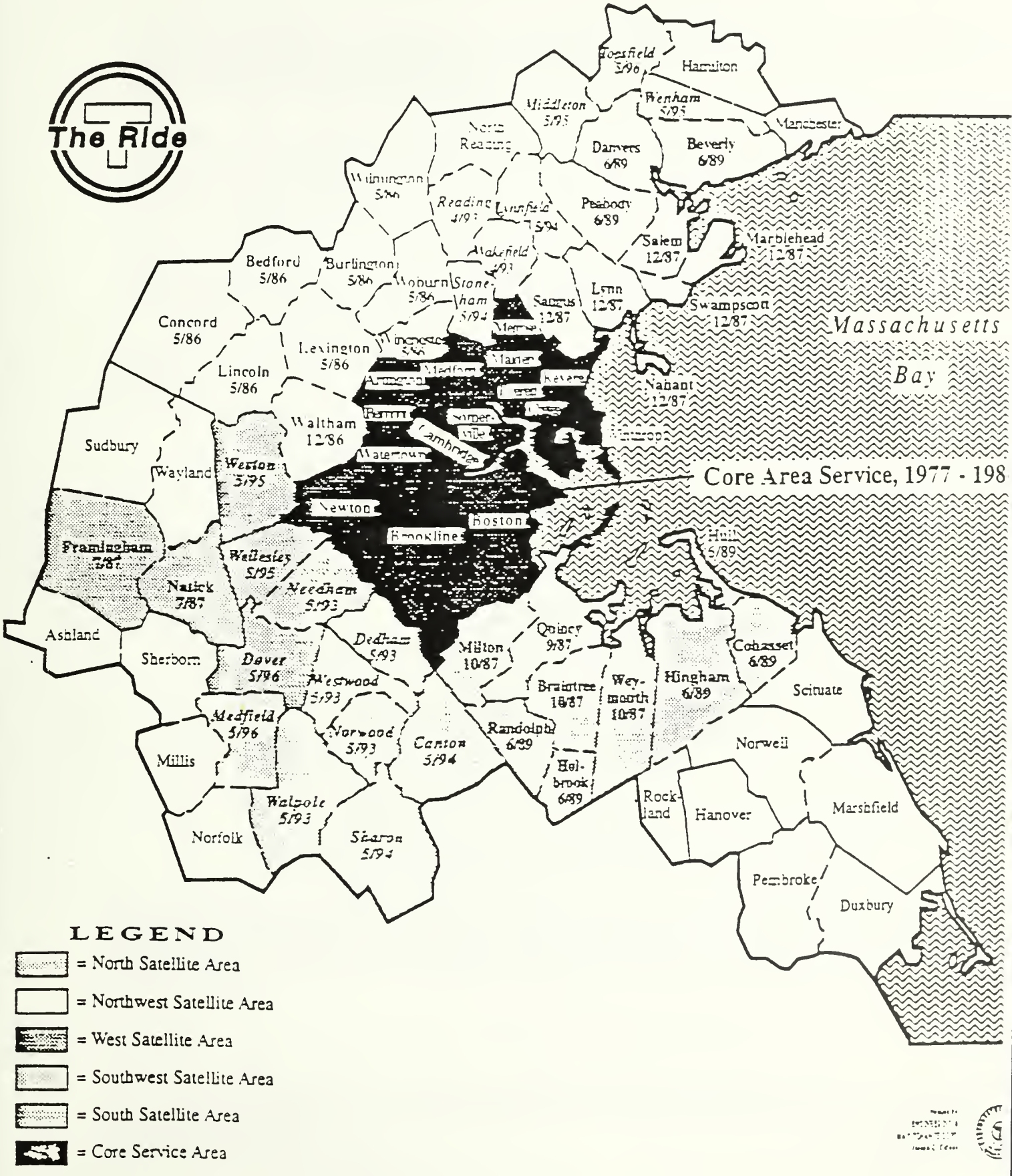
Town and Contractor	Compensation Terms	Service Level	Fare Structure
Bedford Local Transit Town-operated	FY92: MBTA pays 65% of the cost of service net of income. Capped at $17,500 subsidy; FY91 subsidy was $16,883. Since the service is operated directly by the town, there is no contract with a private carrier. FY91 Gross cost was $29,018; revenue was $2,122.	Weekday only: Bedford-Burlington Mall: 2 trips. Door-to-door demand responsive service available to all residents, M–F 9 a.m. to noon, 1–3 p.m. Connections: Lexington and Burlington buses, T route 350 at Mall; T route 62 at Bedford Center	Within Bedford: Base fare 50¢ Elderly and handicapped 25¢ Burlington Mall: Base fare 75¢ Elderly and handicapped 35¢
Beverly Shoppers Shuttle Michaud Bus Lines	FY92: MBTA pays 65% of the cost of service net of income. Capped at $55,000 subsidy; FY91 subsidy was $55,000. Michaud contract specified payment of $287.28 per day for FY91. FY91 Gross cost was $94,235; revenue was $5,050.	Weekday & Saturday: Hourly service in Downtown Loop from 6:45 a.m. to 6:45 p.m. Connections: T bus route 451, Commuter Rail at Beverly Depot and Montserrat	Fare for all passengers 25¢ Monthly passes available
Burlington People Mover Joseph's Limousine Service	FY92: MBTA pays 65% of the cost of service net of income. Capped at $80,000 subsidy; FY91 subsidy was $80,000. Joseph's Limousine contract runs through FY94 and specifies that all primary vehicles contain a wheelchair lift by the third year of the contract. Payment to Joseph's is $23.85 per service-hour plus reimbursement for fuel usage. Gross cost for FY91 was $257,760; revenue was $10,094.	Weekday: 6 routes centered on Burlington Common, 10 trips on each route Connections: Lexington and Bedford buses at Mall, T route 350 along Cambridge St.	Base fare 50¢ Children and elderly 25¢ Transfers are 10¢

Town and Contractor	Compensation Terms	Service Level	Fare Structure
Lexpress (Lexington) A-Connoisseur Transportation Corp. and Burlington Eldorado Transit, Inc.	FY92: MBTA pays 65% of the cost of service net of income. Capped at $80,000 subsidy; FY91 subsidy was $80,000. Maximum subsidy will be increased to $105,000 if service is extended to meet T route 70A in North Waltham. A-Connoisseur/Burlington Eldorado contract not available. Gross cost for FY91 was $314,717; revenue was $58,571.	Weekday: 6 routes centered on Depot Square, 11 trips on each route Saturday: 6 routes centered on Depot Square, 8 trips on each route Connections: Burlington, Bedford buses, T route 350 at Burlington Mall; T routes 62 and 76 at Depot Square	Within Lexington: Base fare 75¢ Students 60¢ Elderly and handicapped 35¢ Children under 6 10¢ Burlington Mall surcharge: Base, students 25¢ Elderly, children, and handicapped 15¢ Transfers 15¢ Monthly passes available
Lynn Loop Buses Travel Time	FY92: MBTA pays 65% of the cost of service net of income. Capped at $35,000 subsidy; FY91 subsidy was $32,000. Travel Time contract not available. Gross cost for FY91 was $78,753; revenue was $3,486.	Weekdays only: East Loop: 7 trips West Loop: 6 trips Connections: All Central Square buses and Commuter Rail	Fare for all passengers is 25¢ (Considered to be a service primarily for elderly and low-income residents)

Town and Contractor	Compensation Terms	Service Level	Fare Structure
Mission Hill Link Kit Clark Senior House/ Federated Dorchester Neighborhood Houses, Inc.	**FY92:** MBTA pays 65% of the cost of service net of income. Capped at $80,000 subsidy; FY91 subsidy was $80,000. Kit Clark Senior House contract specifies payment (FY91 and start of FY92) at the rate of $25.00 per hour including down times during driver's breaks. FY91 Gross cost was $147,360; revenue was $16,286.	**Weekdays:** One route starting and ending at Brigham Circle, 24 trips **Saturday:** One route starting and ending at Brigham Circle, 21 trips Connections: Green Line and T bus routes 39 and 66 at Brigham Circle	Base fare 50¢ Elderly, handicapped and children under 14 25¢ Baptist Hospital employees free
Natick Neighborhood Bus Town-operated	**FY92:** MBTA pays 65% of the cost of service net of income. Capped at $77,000 subsidy; FY91 subsidy was $52,056. FY91 Gross cost was $98,971; revenue was $18,885.	**Weekdays:** Natick Common-Shoppers' World: 17 round trips via 2 routes **Saturday:** Natick Common-Shoppers' World: 11 round trips via 2 routes On request, routes may be diverted to serve additional fixed stops in certain neighborhoods	Base fare 75¢ Elderly and students 50¢ 20-ride ticket available for $7.00
Needham Minibus (Service suspended)	**FY92:** Service was suspended in 1990 due to lack of local funding. The town asked that the MBTA hold subsidy money for the service pending a study of future options. Expectations are that either a proposal will be forthcoming for FY93, or that the service will be permanently terminated.	**Weekdays only:** 4 routes centered on Town Hall: 8 trips each (Service operated prior to suspension)	

Town and Contractor	Compensation Terms	Service Level	Fare Structure
Norwood	FY92: Currently this service is operating without an MBTA subsidy due to a dispute over the level of insurance coverage carried by the contractor. The town hopes to force the operator to comply so that it can obtain subsidy payments in FY93. FY91 Gross cost was $38,972; revenue was $16,172.	No fixed routes; intratown demand responsive service	Not available

THE RIDE SERVICE AREA



APPENDIX D

ROUTE PACKAGES AND COST MODEL

This appendix contains a description of the cost model used to estimate the costs of MBTA bus routes and the results of the application of that model to several sets of routes selected based on various financial and operating criteria.

The cost model was developed using cost data from the MBTA's 1992 section 15 report. The revenue data used were from internal MBTA reports. The MBTA'S method of allocating revenues to routes does not produce revenues for some segments of service which operate as a part of larger routes. As a result, several small routes have no revenue allocated to them in this exercise. If any of the routes are included in a competitive contracting package, revenue allocations will need to be made. Similarly, several routes do not have any buses assigned to them during the AM peak hour. This routes operate as parts of other routes, or are not in service during the peak period.

Exhibit 1 is a numerical listing of all routes. The route groups that are presented in this appendix are:

- Exhibit 2, the routes with the highest operating costs
- Exhibit 3, the routes with the highest operating subsidy
- Exhibit 4, the routes with the highest operating ratio
- Exhibit 5, the routes with the lowest operating costs
- Exhibit 6, the routes with the lowest operating subsidy
- Exhibit 7, the routes with the lowest operating ratio
- Exhibit 8, two sets of express routes
- Exhibit 9, routes assigned to each garage
- Exhibit 10, routes serving rapid transit and commuter rail stations.

The number of routes in each of the route groups based on financial characteristics were limited arbitrarily to 200 buses for the high cost routes and 100 buses for the low cost routes. The smaller number of buses for the low costs services was indicated by the larger number of routes in that category.

Cost Allocation Model

The process of identifying the costs of individual MBTA bus routes during this phase of the project consisted of a series of steps. The steps culminated in the development of a 3 factor cost allocation model and subsequent applicator to the statistics of the MBTA's bus routes.

This model can be thought of as a "planning" model for use in determining the avoidable and total costs of each route for the purpose of evaluating each route as a candidate for competitive contracting. An even more detailed model will need to be developed for determining the precise costs of services to be included in competitive contract procurements.

Three cost models of increasing precision were used in various stages of the process of reviewing the financial performance of existing services, selecting and evaluating the route groups, and developing the detailed cost estimates of the services to be contracted. This staged sequence was used so that preliminary route groups evaluations could be formulated during the early weeks of the project while the "planning" model was developed

The 3 models used were:

- MBTA "avoidable" cost model, which was used during the process of considering routes as potential candidates for contracting

- Expanded version of the MBTA model which included a higher percentage of total costs was used to test and revise the results of the first.cut of route group options developed based on the avoidable cost model

- Entirely new cost model was used to develop the most recent cost estimates. .This model was applied to the statistics of all T bus services. The results of this model are the basis on which the route costs included in the spreadsheets in this Appendix were made.

This third model is consistent with the FTA fully allocated costs guidelines. This model, which will continue to be refined for the remainder of the project, provides a sound foundation for estimating the costs of individual routes and groups of routes for planning purposes. A more detailed version of this model - a "bidding" model - needs to be developed as a tool for determining the precise costs of the specific routes which may be offered for contracting during Phase II. In this "bidding" model,. consideration should be given to using "pay hours" in place of service hours for each route.

The "planning" model allocated 56 line items of the total costs of the MBTA's bus division and assigned each of them to 1 of 3 categories:

- Costs which are most sensitive to the number of hours of operation were a to "hours of operation"

- Costs which are most sensitive to the number of miles operated were a "miles of operation"

- Remaining costs, which consist mostly of costs which tend not to va incremental changes in the miles and hours of service, were assigned to t category of "other costs".

The sum of the costs that were allocated to each of these categories were then used to de coefficient for each variable:

- Total costs allocated to hours were divided by hours of operation, v resultant coefficient of $43.11

- Total costs allocated to miles were divided by miles of operation, v resultant coefficient of $2.32

- Difference between all costs and the sum of the total costs allocated to ho miles were then divided into the total costs, and a factor for "other costs" was derived.

An optional basis of allocating the "other costs" is to develop the coefficient by dividing of this category of costs by the number of peak buses. This produces an "other cost" p bus of $57,563.

The current status of the planning model is summarized on the following pages This sh allocation of each of the 56 line items to 1 of the 3 categories of costs, the miles and h operation, the peak bus requirement, and the factors derived for each of the three coeff

The formula for applying these factors to any route is:

($43.11 times the number of hours + $2.32 times the number of miles) x 1.31

or

$43.11 times the number of hours, plus
$2.32 times the number of miles, plus
$57,563 times the number of peak buses

The fully allocated costs of each route was developed by multiplying the hours of service times the hours coefficient and the miles of service by the miles of operation, and then multiplying the result by the "other costs" factor.

The results of this process are illustrated in the spreadsheets which show the financial characteristics and operating statistics of each of the route groups that were evaluated during this phase of the project.

Changes in the model to reflect changes in the costs of operation can be made by determining the costs of each of the line items of expense, calculating the changes in the coefficients, and then applying those changes to the statistics of any unit of service in question.

The revenues that were used to calculate the subsidies and operating ratios for each routes were provided by the MBTA. These allocations are adequate for planning purposes, but they have not been validated. The process used by the MBTA in making these revenue allocations needs to be reviewed and validated prior to preparation of the final description of services to be contracted.

Allocation of 1992 Section 15 Form 301 MB costs to hours, miles, "all other", with changes as of June 15, 1993

VehOperations	Form 301 1992 Costs	Allocated to Hours	Allocated to Miles	Allocated to "All other"
Operators salaries & Wages	43,677,399	43,677,399	0	0
Other Salaries and Wages	14,056,979	7,363,874	0	6,693,105
Fringe Benefits	46,891,089	41,455,039	0	5,436,050
Services	143,974	143,974	0	0
Fuel and Lubricants	5,028,460	0	5,028,460	0
Tries and Tubes	957,564	0	957,564	0
Other M&S	48,853	0	0	0
Utilities	0	0	0	0
Cas/Liability	0	0	0	0
Taxes	1,648,892	0	1,648,892	0
PT	0	0	0	0
PT	0	0	0	0
MiscExpense	2,820	0	0	0
Expense Transfer	(3,647,845)	(3,224,953)		(422,892)
NonVehMain				
	108,808,185	89,415,333	7,634,916	11,706,263
Vehicle Maintenance				
Operators salaries & Wages	490	490	0	0
Other Salaries and Wages	19,347,657	0	19,347,657	0
Fringe Benefits	15,683,708	0	15,683,708	0
Services	1,649,442	0	1,649,442	0
Fuel and Lubricants	100,880	0	100,880	0
Tries and Tubes	0	0	0	0
Other M&S	4,721,709	0	4,721,709	0
Utilities	0	0	0	0
Cas/Liability	905,739	0	905,739	0
Taxes	0	0	0	0
PT	0	0	0	0
PT	0	0	0	0
MiscExpense	1,380	0	1,380	0
Expense Transfer	(5,200,172)	0	(5,200,172)	0
NonRevVehMaint	(831,011)		(831,011)	
	36,379,822	490	36,379,332	0
NonVehicleMaintenace				
Operators salaries & Wages	9,139			9,139
Other Salaries and Wages	4,552,337			4,552,337
Fringe Benefits	3,678,046			3,678,046
Services	851,458			851,458
Fuel and Lubricants	0			0
Tries and Tubes	0			0
Other M&S	1,888,799			1,888,799
Utilities	496,333			496,333
Cas/Liability	(443)			(443)
Taxes	0			0
PT	0			0
PT	0			0
MiscExpense	0			0
Expense Transfer	(1,225,982)			(1,225,982)
NonRevVehMaint	831,011			831,011
	11,080,698	0	0	11,080,698

Allocation of 1992 Section 15 Form 301 MB costs to hours, miles, "all other", with changes as of June 15, 1993 (Continued)

General Administration				
Operators salaries & Wages	0			0
Other Salaries and Wages	6,074,369			6,074,369
Fringe Benefits	5,095,069			5,095,069
Services	4,987,196			4,987,196
Fuel and Lubricants	0			0
Tries and Tubes	0			0
Other M&S	505,601			505,601
Utiliteisd	4,716,021			4,716,021
Cas/Liability	6,635,076		6,635,076	
Taxes	196,801			196,801
PT	5,278,612			0
PT	0			0
MiscExpense	1,446,875			1,446,875
Expense Transfer	(1,632,573)			(1,632,573)
NonVehMaint	0			0
	33,303,047	0	6,635,076	21,389,359
Total Costs				
Operators salaries & Wages	43,687,028	43,677,889	0	9,139
Other Salaries and Wages	44,031,342	7,363,874	19,347,657	17,319,811
Fringe Benefits	71,347,912	41,455,039	15,683,708	14,209,165
Services	7,632,070	143,974	1,649,442	5,838,654
Fuel and Lubricants	5,129,340	0	5,129,340	0
Tries and Tubes	957,564	0	957,564	0
Other M&S	7,164,962	0	4,721,709	2,394,400
Utiliteisd	5,212,354	0	0	5,212,354
Cas/Liability	7,540,372	0	7,540,815	(443)
Taxes	1,845,693	0	1,648,892	196,801
PT	5,278,612	0	0	0
PT	0	0	0	0
MiscExpense	1,451,075	0	1,380	1,446,875
Expense Transfer	(11,706,572)	(3,224,953)	(5,200,172)	(3,281,447)
NonVehMaint	0	0	(831,011)	831,011
Grand Total	189,571,752	89,415,823	51,480,335	43,345,309
Less PT	184,293,140	89,415,823	51,480,335	43,345,309
Hours	2,074,292	2,074,292		
Miles			22,175,235	
Peak bus				753
Total costs/hour	**$88.85**			
Hours Factor		**$43.11**		
Miles Factor			**$2.32**	
"All other costs" factor (All costs/hours&miles costs)				**1.31**
Per Peak Bus Alternative				**$57,563**

Exhibit 1

Routes Listed by Route Number

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	$2,842,856	$3,724,141	$78.25	$2,245,300	39.7%
3	Bos. Marine Ind. Pk. - Chinatown	Cabot	Chinatown	2	16,135	2,058	126,154	165,262	80.30	135,571	18.0%
5	City Point - McCormack Housing	Cabot	Andrew	0	10,065	1,855	103,320	135,349	72.96	110,698	18.2%
6	Marine Ind. Pk. - South Station/Haymarket	Cabot	Haymarket	3	39,458	5,084	310,714	407,035	80.06	331,110	18.7%
7	City Point - Franklin & Devonshire Sts.	Cabot	South	5	107,155	13,096	813,168	1,065,250	81.34	828,162	22.3%
8	Harbor Point/U.Mass - Kenmore Sta.	Cabot	Kenmore	12	241,570	30,099	1,858,010	2,433,993	80.87	2,004,189	17.7%
9	City Point - Copley Sq.Via Broadway	Cabot	Copley	7	211,512	26,728	1,642,952	2,152,267	80.52	1,498,632	30.4%
10	City Point - Copley Sq. via B.C.H.	Cabot	Copley	3	119,229	14,471	900,456	1,179,597	81.51	942,509	20.1%
11	City Point - Downtown Via Broadway	Cabot	Downtown	12	230,488	29,433	1,803,589	2,362,702	80.27	1,779,295	24.7%
14	Roslindale Square - Dudley Square	Bartlett	Dudley	1	41,010	3,324	238,441	312,358	93.97	257,030	17.7%
15	Kane Sq. - Ruggles Sta.	Cabot	Ruggles	7	167,643	23,126	1,385,894	1,815,521	78.51	1,221,596	32.7%
16	Forest Hills Sta. - JFK/UMass	Cabot	Andrew	5	175,164	16,913	1,135,500	1,487,505	87.95	1,251,294	15.9%
17	Fields Corner Sta. - JFK/UMass	Cabot	Andrew	3	89,151	11,240	691,387	905,717	80.58	432,637	52.2%
18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
20	Fields Corner Sta. - Neponset & Adams	Quincy	Fields Corner	3	119,773	12,664	823,818	1,079,202	85.22	913,986	15.3%
21	Ashmont Sta. - Forest Hills Sta.	Cabot	Forest Hills	4	142,187	11,343	818,871	1,072,721	94.57	724,430	32.5%
22	Ashmont Sta. - Ruggles Sta. via Jackson	Cabot	Ruggles	12	335,471	36,622	2,357,067	3,087,758	84.31	2,434,780	21.1%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
24	Wakefield Ave. - Mattapan Sta.	Bartlett	Mattapan	2	89,101	9,311	608,112	796,627	85.56	630,096	20.9%
26	Ashmont Sta. - Washington & Norfolk Belt	Bartlett	Ashmont	2	71,484	8,254	521,873	683,392	82.80	482,569	29.4%
27	Mattapan Sta. - Ashmont Sta.	Bartlett	Ashmont	1	37,111	4,208	267,504	350,430	83.28	275,272	21.4%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,776	2,988,482	3,914,911	81.94	2,715,339	30.6%
29	Mattapan Sta. - Ruggles Sta.	Bartlett	Mattapan	4	120,131	13,882	877,157	1,149,078	82.77	818,972	28.7%
30	Mattapan Sta. - Roslindale Square	Bartlett	Mattapan	2	102,535	10,606	695,106	910,589	85.86	673,611	26.0%
31	Mattapan Sta. - Forest Hills Sta.	Bartlett	Forest Hills	5	188,813	21,453	1,362,885	1,785,379	83.22	1,328,514	25.6%
32	Walcott St./Cleary Sq. - Forest Hills Sta.	Bartlett	Forest Hills	8	304,651	27,531	1,893,652	2,480,684	90.11	1,874,160	24.4%
33	River & Milton Sts. - Mattapan Sta.	Bartlett	Mattapan	1	44,988	4,329	290,995	381,203	88.06	300,457	21.2%
34	Walpole/Dedham Line - Forest Hills Sta.	Bartlett	Forest Hills	12	550,386	45,988	3,259,438	4,269,864	92.85	3,345,048	21.7%
35	Dedham Mall - Forest Hills Sta.	Bartlett	Forest Hills	3	147,997	13,796	938,099	1,228,910	89.08	978,155	20.8%
36	Charles River Loop - Forest Hills Sta.	Bartlett	Forest Hills	5	274,438	19,742	1,487,774	1,948,984	98.72	1,592,366	18.3%
37	Baker & Vermont Sts. - Forest Hills Sta.	Bartlett	Forest Hills	3	101,435	11,879	747,433	979,137	82.43	805,265	17.8%
38	Wren St. Forest Hills Sta.	Bartlett	Forest Hills	2	83,558	7,842	531,923	696,819	88.86	589,450	15.4%
39	Forest Hills Sta. - Back Bay Sta.	Bartlett	Forest Hills	24	717,314	83,709	5,272,863	8,907,451	82.52	5,026,634	27.2%
40	Georgetown - Forest Hills Sta.	Bartlett	Forest Hills	2	63,872	5,928	403,739	528,898	89.22	422,406	20.1%
41	Centre & Eliot Sts. - Dudley Square	Bartlett	Dudley	2	69,719	7,600	489,384	641,093	84.35	552,678	13.8%
42	Forest Hills Sta. - Ruggles via Washington	Bartlett	Ruggles	5	127,569	17,145	1,035,081	1,355,956	79.09	1,119,635	17.4%

43	Ruggles Sta. - Park & Tremont Sts.	Cabot	Ruggles	5	141,080	21,393	1,249,558	1,636,921	76.52	1,238,451	24.3%
44	Jackson Sta. - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	172,334	19,852	1,255,635	1,644,882	82.86	1,021,595	37.9%
45	Franklin Park - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	164,400	19,557	1,224,510	1,604,108	82.02	1,098,160	31.5%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
47	Central Sq. - Albany St.	Albany	Central Sq.	4	208,016	24,084	1,520,858	1,992,324	82.72	1,631,105	18.1%
48	Centre & Eliot Sts. - Jamaica Plain Loop	Bartlett	Dudley	0	21,960	2,255	148,160	194,090	86.07	165,604	14.7%
49	Dudley Sq. - Downtown	Cabot	Dudley	7	196,218	32,223	1,844,359	2,416,110	74.98	1,731,360	28.3%
50	Cleary Sq. - Forest Hills Sta. via Metropoltn.	Bartlett	Forest Hills	3	60,830	6,054	402,114	526,769	87.01	398,912	24.3%
51	Cleveland Circle - Forest Hills Sta.	Bartlett	Forest Hills	3	141,429	11,042	804,136	1,053,418	95.40	842,405	20.0%
52	Dedham Mall - Watertown Square	Bartlett	Watertown Sq.	5	141,386	9,908	755,149	989,245	99.84	857,747	13.3%
53	Roberts - Newton Corner	Albany	Newton Corner	2	54,396	5,838	377,875	495,016	84.79	408,573	17.5%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
55	Queensberry St. - Park & Tremont Sts.	Cabot	Copley	3	72,476	9,531	579,026	758,524	79.58	847,211	14.7%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
59	Needham Junction - Watertown Sq.	Albany	Watertown Sq.	3	117,020	9,912	698,793	915,419	92.35	769,595	15.9%
60	Chestnut Hill - Kenmore Sta.	Albany	Kenmore	4	162,344	16,212	1,075,537	1,408,953	86.91	1,142,065	18.9%
62	Bedford V. A. Hospital - Alewife Sta.	Somerville	Alewife	3	155,192	9,300	$760,968	$996,868	#######	$802,067	19.5%
64	Oak Sq. - Central Sq. Cambridge	Somerville	Kendall	4	124,084	13,724	879,517	1,152,167	83.95	949,481	17.6%
65	Brighton Center. - Kenmore Sta.	Albany	Kenmore	3	76,501	9,998	608,496	797,130	79.73	595,868	25.2%
66	Harvard Sq. - Dudley Sq. via Brookline	Cabot	Harvard	10	346,984	45,887	2,783,191	3,645,980	79.46	2,627,072	27.9%
67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
69	Harvard Sq. - Lechmere Sta.	Somerville	Lechmere	7	98,673	14,290	844,963	1,106,902	77.46	707,337	36.1%
70	Cedarwood - Central Sq. Cambridge	Somerville	Central Sq.	10	461,045	36,906	2,660,642	3,485,441	94.44	2,743,062	21.3%
74	Belmont Center - Harvard	Somerville	Harvard	3	154,708	11,804	867,793	1,136,809	96.31	939,601	17.3%
76	Hanscom Air Base - Alewife Sta.	Somerville	Alewife	3	175,686	8,837	788,555	1,033,007	116.90	909,348	12.0%
77	Arlington Heights - Harvard	Somerville	Harvard	11	485,322	50,129	3,287,008	4,305,980	85.90	3,468,503	19.4%
78	Arlmont Village - Harvard	Somerville	Harvard	4	218,029	16,408	1,213,176	1,589,261	96.86	1,378,468	13.3%
79	Arlington Heights - Alewife Sta.	Somerville	Alewife	6	115,579	11,932	782,532	1,025,117	85.91	829,224	19.1%
80	Arlington Center - Lechmere Sta.	Somerville	Lechmere	5	170,571	15,876	1,080,139	1,414,982	89.13	1,026,482	27.5%
83	Rindge Ave. - Central Sq. Cambridge	Somerville	Central Sq.	7	106,280	14,577	874,984	1,146,229	78.63	819,083	28.5%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
85	Spring Hill - Kendall Sta.	Somerville	Kendall	1	24,900	3,133	192,832	252,610	80.63	203,418	19.5%
86	Sulivan Sta. - Cleveland Circle	Somerville	Sullivan	5	178,044	19,032	1,233,532	1,615,927	84.91	1,243,642	23.0%
87	Clarendon Hill - Lechmere Sta. Via Som.	Somerville	Lechmere	4	175,834	17,744	1,172,879	1,536,471	86.59	1,136,139	26.1%
88	Clarendon Hill - Lechmere Sta. Via Hglnd.	Somerville	Lechmere	8	165,970	19,105	1,208,667	1,583,354	82.88	1,167,902	26.2%
89	Clarendon Hill - Sullivan Sta.	Charlestown	Sullivan	6	133,432	15,550	979,923	1,283,699	82.55	776,436	39.5%
90	Davis Sq. Sta. - Wellington Sta.	Charlestown	Wellington	3	68,359	6,779	450,836	590,595	87.12	474,461	19.7%
91	Sullivan Sta. - Central Sq. Cambridge	Charlestown	Sullivan	2	72,206	9,945	596,247	781,084	78.54	600,420	23.1%
92	Sullivan Sta. - Franklin & Wash. Via Main	Charlestown	Haymarket	5	147,613	12,794	894,012	1,171,156	91.54	962,773	17.8%
93	Sullivan Sta. - Franklin & Wash. Sts.	Charlestown	Haymarket	11	157,675	22,667	1,342,980	1,759,304	77.62	1,284,252	27.0%
94	Medford Sq. - Davis Sq. Sta.	Fellsway	Davis	2	117,265	10,292	715,743	937,623	91.10	790,922	15.6%
95	West Medford - Sullivan Sta.	Fellsway	Sullivan	6	160,825	14,126	982,086	1,286,533	91.08	1,118,797	13.0%

96	Medford Sq. - Bennett Alley Via George	Fellsway	Harvard	3	111,670	14,174	870,118	1,139,852	80.42	949,765	16.7%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%
99	Upper Highland Ave. - Wellington Sta.	Fellsway	Malden	4	148,950	12,731	894,397	1,171,660	92.03	982,779	16.1%
100	Elm St. - Wellington Sta.	Fellsway	Wellington	2	106,491	9,493	656,302	859,756	90.57	720,615	16.2%
101	Salem St. - Sullivan Sta.	Fellsway	Sullivan	9	196,984	20,321	1,333,041	1,746,284	85.93	1,322,725	24.3%
104	Malden Sta. - Sullivan Sta. Via Ferry St.	Charlestown	Sullivan	5	143,014	15,149	984,866	1,290,174	85.17	938,706	27.2%
105	Malden Sta. - Sullivan Sta. Via Faulkner	Fellsway	Sullivan	2	78,896	7,116	489,809	641,650	90.17	544,251	15.2%
106	Lebanon St. Loop - Wellington Sta.	Fellsway	Wellington	4	150,607	14,414	970,796	1,271,743	88.23	1,060,840	16.6%
108	Linden Sq. - Wellington Sta.	Fellsway	Wellington	4	159,702	16,483	1,081,091	1,416,229	85.92	1,142,986	19.3%
109	Linden Sq. - Sullivan Sta.	Charlestown	Sullivan	5	156,273	16,752	1,084,732	1,420,999	84.83	1,153,892	18.8%
110	Wonderland Sta. - Wellington Sta.	Charlestown	Wellington	6	169,638	15,995	1,083,105	1,418,868	88.71	1,174,987	17.2%
111	Woodlawn - Haymarket Sta.	Charlestown	Haymarket	11	300,549	29,356	1,962,811	2,571,282	87.59	1,931,342	24.9%
112	Wellington Sta. - Maverick Sta.	Charlestown	Maverick	3	139,665	13,172	891,868	1,168,347	88.70	930,821	20.3%
116	Wonderland Sta. - Maverick Via Revere	Lynn	Maverick	5	159,858	16,168	1,067,873	1,398,914	86.52	935,147	33.2%
117	Wonderland Sta. - Maverick Via Beach	Lynn	Maverick	4	141,086	14,918	970,435	1,271,270	85.22	898,437	29.3%
119	North Gate - Beachmont Sta.	Lynn	Beachmont	2	88,891	7,810	542,918	711,220	91.07	587,855	17.3%
120	Orient Heights Sta. - Maverick Sta.	Lynn	Maverick	5	154,856	17,364	1,107,828	1,451,255	83.58	1,078,422	25.7%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	78.30	68,641	39.8%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
131	Melrose Highlands - Malden Sta.	Fellsway	Malden	2	52,888	4,349	310,186	406,344	93.43	340,060	18.3%
134	North Woburn - Wellington Sta.	Fellsway	Wellington	4	185,697	18,652	1,234,905	1,817,726	86.73	1,297,731	19.8%
136	Reading Sq. - Malden Sta. Via Lakeside	Fellsway	Malden	4	93,324	7,193	528,602	689,849	95.91	529,779	23.2%
137	Reading Depot - Malden Sta. Via North St.	Fellsway	Malden	4	104,111	8,191	594,652	778,994	95.10	589,862	24.3%
170	Industrial Park - Dudley	Albany	None	0	11,504	959	68,032	89,122	92.93	89,122	0.0%
181	Blue Line shuttle - late night	Lynn	Wonderland	0	3,984	332	23,555	30,857	92.94	30,857	0.0%
191	Early AM Employee trips	Bartlett	None	0	4,183	349	24,750	32,423	92.90	32,423	0.0%
192	Early AM Employee trips	Bartlett	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
193	Early AM Employee trips	Cabot	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
194	Early AM Employee trips	Charlestown	None	0	1,195	100	7,083	9,279	92.79	9,279	0.0%
195	Early AM Employee trips	Bartlett	None	0	3,237	270	19,150	25,087	92.91	25,087	0.0%
210	Quincy Sta. - No. Quincy. Via Hancock	Quincy	Fields Corner	2	68,170	8,776	450,268	589,851	87.05	485,769	17.6%
211	Quincy Sta. - Squantum	Quincy	Quincy	1	68,642	8,524	440,499	577,054	88.45	481,956	16.5%
212	Quincy Sta. - North Quincy Sta.	Quincy	Quincy	1	18,579	2,007	129,625	169,809	84.81	141,323	18.8%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	418,336	548,020	81.49	352,784	35.6%
215	Quincy Sta. - Ashmont Sta. Via W. Quincy	Quincy	Ashmont	3	161,235	13,088	938,289	1,229,159	93.91	998,296	18.8%
216	Quincy Sta. - Houghs Neck	Quincy	Quincy	5	133,872	11,059	787,337	1,031,411	93.26	889,750	13.7%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	378,836	493,655	90.58	440,847	10.7%
220	Quincy Sta. - Hingham Center	Quincy	Quincy	6	177,848	14,630	1,043,307	1,366,732	93.42	1,184,205	13.4%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
222	Quincy Sta. - East Weymouth	Quincy	Quincy	5	193,280	13,357	1,024,230	1,341,741	100.45	1,113,808	17.0%
225	Quincy Sta. - Weymouth Via Desmoines	Quincy	Quincy	5	153,217	13,929	955,943	1,252,285	89.90	1,031,412	17.6%
230	Quincy Sta. - Brockton Line	Quincy	Quincy	4	219,439	16,192	1,207,136	1,581,348	97.66	1,405,095	11.1%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	91.55	443,841	10.2%
238	North Randolph - So. Shore Plaza	Quincy	Ashmont	2	165,617	10,821	850,725	1,114,450	102.99	987,032	11.4%

240	Crawford Sq. - Ashmont Sta.	Quincy	Ashmont	6	263,477	15,986	1,300,423	1,703,554	106.57	1,368,194	19.7%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
276	Boston City Hospital - Long Island	Quincy	None	3	39,093	3,258	231,148	302,804	92.94	302,804	0.0%
277	Shattuck Hospital - Downtown	Quincy	Downtown	1	2,739	228	16,184	21,201	92.99	21,201	0.0%
300	Riverside Sta. - Federal & Franklin	Albany	None	9	262,608	9,723	1,028,409	1,347,216	138.56	884,524	34.3%
301	Brighton Ctr. - Federal Franklin	Albany	Haymarket	12	203,634	11,973	988,587	1,295,049	108.16	790,824	38.9%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
305	Waltham Center-Federal & Franklin	Albany	None	11	220,776	11,164	993,480	1,301,459	116.58	703,461	45.9%
325	Elm St. - Haymarket Sta.	Fellsway	Haymarket	5	88,420	6,242	474,227	621,237	99.53	451,295	27.4%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
350	Burlington - Alewife Sta.	Somerville	Alewife	5	253,440	15,657	1,262,954	1,654,470	105.67	1,451,136	12.3%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
353	Burlington Ind. Area - Haymarket Sta.	Charlestown	Haymarket	0	89,640	4,781	414,074	542,437	113.46	470,999	13.2%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.16	240,264	51.3%
400	Lynn - Boston Via Common	Lynn	Haymarket	5	282,971	15,610	1,329,440	1,741,566	111.57	1,359,847	21.9%
411	Granada Highlands - Malden Sta.	Fellsway	Malden	1	82,564	6,306	463,400	607,054	96.27	529,376	12.8%
426	Lynn - Boston Via Cliftondale	Lynn	Haymarket	13	277,423	18,490	1,440,725	1,887,350	102.07	1,501,618	20.4%
429	Central Sq. - North Saugus	Lynn	Lynn	2	71,850	7,613	494,888	648,303	85.16	558,185	13.9%
430	Appleton St. Suagus - Malden Sta.	Fellsway	Malden	2	82,878	6,604	476,975	624,837	94.61	566,770	9.3%
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	113,941	149,263	87.60	141,014	5.5%
435	Central Sq. - Liberty Tree Mall	Lynn	Lynn	0	83,274	6,776	485,309	635,755	93.82	575,602	9.5%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
437	Central Sq. - Lakeside	Lynn	Lynn	2	62,240	5,970	401,764	526,311	88.16	494,648	6.0%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
440	Lynn - Boston Via Lynnway	Lynn	Haymarket	7	225,312	14,501	1,147,862	1,503,699	103.70	1,043,846	30.6%
441	Central Sq. - Marblehead Via Vinnin	Lynn	Haymarket	2	111,183	6,402	533,935	699,455	109.26	521,475	25.4%
442	Central Sq. - Marblehead Via Humphrey	Lynn	Haymarket	2	176,551	9,813	832,637	1,090,754	111.15	888,504	18.5%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	310,825	24,392	1,772,653	2,322,175	95.20	1,955,999	15.8%
451	Salem Center - North Beverly	Lynn	Salem	1	33,416	2,702	194,008	254,150	94.06	200,391	21.2%
455	Central Sq. - Salem Center	Lynn	Salem	2	141,209	12,245	855,487	1,120,688	91.52	823,703	26.5%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
470	Central Sq. - Riverworks	Lynn	None	0	2,390	199	14,124	18,502	92.97	18,502	0.0%
473	No. Saugus - Riverworks	Lynn	None	0	946	79	5,600	7,336	92.86	7,336	0.0%
475	Buchanan Bridge - Riverworks	Lynn	None	1	6,125	510	36,196	47,417	92.97	47,417	0.0%
476	Essex @ Empire - Riverworks	Lynn	None	0	847	71	5,026	6,584	92.73	6,584	0.0%
					21,734,306	2,069,374	139,634,313	182,920,950	88.39	139,678,132	23.6%

Exhibit 2

Routes With the Highest Operating Expenses

(Capped at 200 buses)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
39	Forest Hills Sta. - Back Bay Sta.	Bartlett	Forest Hills	24	717,314	83,709	$5,272,863	$6,907,451	$82.52	$5,026,634	27.2%
77	Arlington Heights - Harvard	Somerville	Harvard	11	485,322	50,129	3,287,008	4,305,980	85.90	3,468,503	19.4%
34	Walpole/Dedham Line - Forest Hills Sta.	Bartlett	Forest Hills	12	550,386	45,988	3,259,438	4,269,864	92.85	3,345,048	21.7%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,776	2,988,482	3,914,911	81.94	2,715,339	30.6%
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	2,842,856	3,724,141	78.25	$2,245,300	39.7%
66	Harvard Sq. - Dudley Sq. via Brookline	Cabot	Harvard	10	346,984	45,887	2,783,191	3,645,980	79.46	2,627,072	27.9%
70	Cedarwood - Central Sq. Cambridge	Somerville	Central Sq.	10	461,045	36,906	2,660,642	3,485,441	94.44	2,743,062	21.3%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
22	Ashmont Sta. - Ruggles Sta. via Jackson	Cabot	Ruggles	12	335,471	36,622	2,357,067	3,087,758	84.31	2,434,780	21.1%
111	Woodlawn - Haymarket Sta.	Charlestown	Haymarket	11	300,549	29,356	1,962,811	2,571,282	87.59	1,931,342	24.9%
32	Walcott St/Cleary Sq. - Forest Hills Sta.	Bartlett	Forest Hills	8	304,651	27,531	1,893,652	2,480,684	90.11	1,874,160	24.4%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
8	Harbor Point/U.Mass - Kenmore Sta.	Cabot	Kenmore	12	241,570	30,099	1,858,010	2,433,993	80.87	2,004,189	17.7%
49	Dudley Sq. - Downtown	Cabot	Dudley	7	196,218	32,223	1,844,359	2,416,110	74.98	1,731,360	28.3%
11	City Point - Downtown Via Broadway	Cabot	Downtown	12	230,488	29,433	1,803,589	2,362,702	80.27	1,779,295	24.7%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	310,825	24,392	1,772,653	2,322,175	95.20	1,955,999	15.8%
17				201	6,450,298	677,688	44,179,821	57,875,564	85.40	42,094,776	27.3%

Exhibit 3

Routes With the Highest Operating Subsidy

(Capped at 200 buses)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
39	Forest Hills Sta. - Back Bay Sta.	Bartlett	Forest Hills	24	717,314	83,709	$5,272,863	$6,907,451	$82.52	$5,026,634	27.2%
77	Arlington Heights - Harvard	Somerville	Harvard	11	485,322	50,129	3,287,008	4,305,980	85.90	3,488,503	19.4%
34	Walpole/Dedham Line - Forest Hills Sta.	Bartlett	Forest Hills	12	550,386	45,988	3,259,438	4,269,864	92.85	3,345,048	21.7%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
70	Cedarwood - Central Sq. Cambridge	Somerville	Central Sq.	10	461,045	36,906	2,660,642	3,485,441	94.44	2,743,062	21.3%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,776	2,988,482	3,914,911	81.94	2,715,339	30.6%
66	Harvard Sq. - Dudley Sq. via Brookline	Cabot	Harvard	10	346,984	45,887	2,783,191	3,645,980	79.46	2,627,072	27.9%
22	Ashmont Sta. - Ruggles Sta. via Jackson	Cabot	Ruggles	12	335,471	36,622	2,357,067	3,087,758	84.31	2,434,780	21.1%
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	2,842,856	3,724,141	78.25	2,245,300	39.7%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
8	Harbor Point/U.Mass - Kenmore Sta.	Cabot	Kenmore	12	241,570	30,099	1,858,010	2,433,993	80.87	2,004,189	17.7%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	310,825	24,392	1,772,653	2,322,175	95.20	1,955,999	15.8%
111	Woodlawn - Haymarket Sta.	Charlestown	Haymarket	11	300,549	29,356	1,962,811	2,571,282	87.59	1,931,342	24.9%
32	Walcott St./Cleary Sq. - Forest Hills Sta.	Bartlett	Forest Hills	8	304,651	27,531	1,893,652	2,480,684	90.11	1,874,160	24.4%
11	City Point - Downtown Via Broadway	Cabot	Downtown	12	230,488	29,433	1,803,589	2,362,702	80.27	1,779,295	24.7%
49	Dudley Sq. - Downtown	Cabot	Dudley	7	196,218	32,223	1,844,359	2,416,110	74.98	1,731,360	28.3%
47	Central Sq. - Albany St.	Albany	Central Sq.	4	208,016	24,084	1,520,858	1,992,324	82.72	1,631,105	18.1%
36	Charles River Loop - Forest Hills Sta.	Bartlett	Forest Hills	5	274,438	19,742	1,487,774	1,948,984	98.72	1,592,366	18.3%
442	Central Sq. - Marblehead Via Humphrey	Lynn	Haymarket	2	176,551	9,813	832,637	1,090,754	111.15	2,031,490	18.5%
19				199	6,711,672	709,267	46,147,579	60,453,327	85.23	46,207,357	25.5%

Exhibit 4

Routes With the Highest Operating Ratio

(Capped at 200 buses)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	$421,195	$551,765	$112.28	$192,894	65.0%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
17	Fields Corner Sta. - JFK/UMass	Cabot	Andrew	3	89,151	11,240	691,387	905,717	80.58	432,637	52.2%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.18	240,264	51.3%
305	Waltham Center-Federal & Franklin	Albany	None	11	220,776	11,164	993,480	1,301,459	116.58	703,461	45.9%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	78.30	68,641	39.8%
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	2,842,856	3,724,141	78.25	2,245,300	39.7%
89	Clarendon Hill - Sullivan Sta.	Charlestown	Sullivan	6	133,432	15,550	979,923	1,283,699	82.55	776,436	39.5%
301	Brighton Ctr. - Federal Franklin	Albany	Haymarket	12	203,634	11,973	988,587	1,295,049	108.18	790,824	38.9%
44	Jackson Sta. - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	172,334	19,852	1,255,635	1,644,882	82.86	1,021,595	37.9%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
69	Harvard Sq. - Lechmere Sta.	Somerville	Lechmere	7	98,673	14,290	844,963	1,106,902	77.46	707,337	36.1%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	418,336	548,020	81.49	352,784	35.6%
300	Riverside Sta. - Federal & Franklin	Albany	None	9	262,608	9,723	1,028,409	1,347,216	138.56	884,524	34.3%
116	Wonderland Sta. - Maverick Via Revere	Lynn	Maverick	5	159,858	16,168	1,067,873	1,398,914	86.52	935,147	33.2%
15	Kane Sq. - Ruggles Sta.	Cabot	Ruggles	7	167,643	23,126	1,385,894	1,815,521	78.51	1,221,596	32.7%
21	Ashmont Sta. - Forest Hills Sta.	Cabot	Forest Hills	4	142,187	11,343	818,871	1,072,721	94.57	724,430	32.5%
45	Franklin Park - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	164,400	19,557	1,224,510	1,604,108	82.02	1,098,160	31.5%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,778	2,988,482	3,914,911	81.94	2,715,339	30.6%
440	Lynn - Boston Via Lynnway	Lynn	Haymarket	7	225,312	14,501	1,147,862	1,503,699	103.70	1,043,846	30.6%
9	City Point - Copley Sq.Via Broadway	Cabot	Copley	7	211,512	26,728	1,642,952	2,152,287	80.52	1,498,632	30.4%
26	Ashmont Sta. - Washington & Norfolk Belt	Bartlett	Ashmont	2	71,484	8,254	521,873	683,392	82.80	482,569	29.4%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
117	Wonderland Sta. - Maverick Via Beach	Lynn	Maverick	4	141,086	14,918	970,435	1,271,270	85.22	898,437	29.3%
29	Mattapan Sta. - Ruggles Sta.	Bartlett	Mattapan	4	120,131	13,882	877,157	1,149,078	82.77	818,972	28.7%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
83	Rindge Ave. - Central Sq. Cambridge	Somerville	Central Sq.	7	106,280	14,577	874,984	1,146,229	78.63	819,083	28.5%
28				200	5,051,164	490,046	32,844,587	43,026,409	87.80	27,584,410	35.9%

Exhibit 5

Routes With The Lowest Operating Expenses

(Capped at 100 buses)

(Excludes services with no AM peak buses)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
277	Shattuck Hospital - Downtown	Quincy	Downtown	1	2,739	228	$16,184	$21,201	$92.99	$21,201	0.0%
475	Buchanan Bridge - Riverworks	Lynn	None	1	6,125	510	36,196	47,417	92.97	47,417	0.0%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	76.30	68,641	39.8%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	113,941	149,263	87.60	141,014	5.5%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
3	Bos. Marine Ind. Pk. - Chinatown	Cabot	Chinatown	2	16,135	2,058	126,154	165,262	80.30	135,571	18.0%
212	Quincy Sta. - North Quincy Sta.	Quincy	Quincy	1	18,579	2,007	129,625	169,809	84.61	141,323	16.8%
85	Spring Hill - Kendall Sta.	Somerville	Kendall	1	24,900	3,133	192,832	252,610	80.63	203,418	19.5%
451	Salem Center - North Beverly	Lynn	Salem	1	33,416	2,702	194,008	254,150	94.06	200,391	21.2%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
276	Boston City Hospital - Long Island	Quincy	None	3	39,093	3,258	231,148	302,804	92.94	302,804	0.0%
14	Roslindale Square - Dudley Square	Bartlett	Dudley	1	41,010	3,324	238,441	312,358	93.97	257,030	17.7%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
27	Mattapan Sta. - Ashmont Sta.	Bartlett	Ashmont	1	37,111	4,208	267,504	350,430	83.28	275,272	21.4%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%
33	River & Milton Sts. - Mattapan Sta.	Bartlett	Mattapan	1	44,988	4,329	290,995	381,203	88.06	300,457	21.2%
131	Melrose Highlands - Malden Sta.	Fellsway	Malden	2	52,888	4,349	310,186	406,344	93.43	340,060	16.3%
6	Marine Ind. Pk. - South Station/Haymarket	Cabot	Haymarket	3	39,458	5,084	310,714	407,035	80.06	331,110	18.7%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	376,836	493,655	90.58	440,847	10.7%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,848	112.16	240,264	51.3%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	91.55	443,841	10.2%
53	Roberts - Newton Corner	Albany	Newton Corner	2	54,396	5,838	377,875	495,016	84.79	408,573	17.5%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
437	Central Sq. - Lakeside	Lynn	Lynn	2	62,240	5,970	401,764	526,311	88.16	494,648	6.0%
50	Cleary Sq. - Forest Hills Sta. via Metropoltn.	Bartlett	Forest Hills	3	60,830	6,054	402,114	526,769	87.01	398,912	24.3%

40	Georgetown - Forest Hills Sta.	Bartlett	Forest Hills	2	63,872	5,928	403,739	528,898	89.22	422,406	20.1%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	418,336	548,020	81.49	352,784	35.6%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
211	Quincy Sta. - Squantum	Quincy	Quincy	1	68,642	6,524	440,499	577,054	88.45	481,956	16.5%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
210	Quincy Sta. - No. Quincy. Via Hancock	Quincy	Fields Corner	2	68,170	6,776	450,268	589,851	87.05	485,769	17.6%
90	Davis Sq. Sta. - Wellington Sta.	Charlestown	Wellington	3	68,359	6,779	450,836	590,595	87.12	474,461	19.7%
411	Granada Highlands - Malden Sta.	Fellsway	Malden	1	82,564	6,306	463,400	607,054	96.27	529,376	12.8%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
45				99	2,155,210	191,350	13,249,190	17,356,437	90.71	13,960,138	19.6%

Exhibit 6

Routes With The Lowest Operating Subsidies

(Capped at 100 buses)

(Excludes services with no AM peak buses)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
277	Shattuck Hospital - Downtown	Quincy	Downtown	1	2,739	228	$16,184	$21,201	$92.99	$21,201	0.0%
475	Buchanan Bridge - Riverworks	Lynn	None	1	6,125	510	36,196	47,417	92.97	47,417	0.0%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	76.30	68,641	39.8%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
3	Bos. Marine Ind. Pk. - Chinatown	Cabot	Chinatown	2	16,135	2,058	126,154	165,262	80.30	135,571	18.0%
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	113,941	149,263	87.60	141,014	5.5%
212	Quincy Sta. - North Quincy Sta.	Quincy	Quincy	1	18,579	2,007	129,625	169,809	84.61	141,323	16.8%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
451	Salem Center - North Beverly	Lynn	Salem	1	33,416	2,702	194,008	254,150	94.06	200,391	21.2%
85	Spring Hill - Kendall Sta.	Somerville	Kendall	1	24,900	3,133	192,832	252,610	80.63	203,418	19.5%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.16	240,264	51.3%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
14	Roslindale Square - Dudley Square	Bartlett	Dudley	1	41,010	3,324	238,441	312,358	93.97	257,030	17.7%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
27	Mattapan Sta. - Ashmont Sta.	Bartlett	Ashmont	1	37,111	4,208	267,504	350,430	83.28	275,272	21.4%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
33	River & Milton Sts. - Mattapan Sta.	Bartlett	Mattapan	1	44,988	4,329	290,995	381,203	88.06	300,457	21.2%
276	Boston City Hospital - Long Island	Quincy	None	3	39,093	3,258	231,148	302,804	92.94	302,804	0.0%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
6	Marine Ind. Pk. - South Station/Haymarket	Cabot	Haymarket	3	39,458	5,084	310,714	407,035	80.06	331,110	18.7%
131	Melrose Highlands - Malden Sta.	Fellsway	Malden	2	52,888	4,349	310,186	406,344	93.43	340,060	16.3%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	418,336	548,020	81.49	352,784	35.6%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
50	Cleary Sq. - Forest Hills Sta. via Metropoltn.	Bartlett	Forest Hills	3	60,830	6,054	402,114	526,769	87.01	398,912	24.3%

67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
53	Roberts - Newton Corner	Albany	Newton Corner	2	54,396	5,838	377,875	495,016	84.79	408,573	17.5%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
40	Georgetown - Forest Hills Sta.	Bartlett	Forest Hills	2	63,872	5,928	403,739	528,898	89.22	422,406	20.1%
17	Fields Corner Sta. - JFK/UMass	Cabot	Andrew	3	89,151	11,240	691,387	905,717	80.58	432,637	52.2%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	376,836	493,655	90.58	440,847	10.7%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	91.55	443,841	10.2%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
325	Elm St. - Haymarket Sta.	Fellsway	Haymarket	5	88,420	6,242	474,227	621,237	99.53	451,295	27.4%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
90	Davis Sq. Sta. - Wellington Sta.	Charlestown	Wellington	3	68,359	6,779	450,836	590,595	87.12	474,461	19.7%
42				101	2,042,201	182,563	12,608,202	16,516,742	90.47	12,790,981	22.6%

Exhibit 7
Routes With The Lowest Operating Ratios
(Capped at 100 buses)
(Excludes services with no AM peak buses and routes with no allocated revenues)

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	$113,941	$149,263	$87.60	$141,014	5.5%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
437	Central Sq. - Lakeside	Lynn	Lynn	2	62,240	5,970	401,764	526,311	88.16	494,648	6.0%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
430	Appleton St. Saugus - Malden Sta.	Fellsway	Malden	2	82,878	6,604	476,975	624,837	94.61	566,770	9.3%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	91.55	443,841	10.2%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	376,836	493,655	90.58	440,847	10.7%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
230	Quincy Sta. - Brockton Line	Quincy	Quincy	4	219,439	16,192	1,207,136	1,581,348	97.66	1,405,095	11.1%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
238	North Randolph - So. Shore Plaza	Quincy	Ashmont	2	165,617	10,821	850,725	1,114,450	102.99	987,032	11.4%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
76	Hanscom Air Base - Alewife Sta.	Somerville	Alewife	3	175,686	8,837	788,555	1,033,007	116.90	909,348	12.0%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
350	Burlington - Alewife Sta.	Somerville	Alewife	5	253,440	15,657	1,262,954	1,654,470	105.67	1,451,136	12.3%
411	Granada Highlands - Malden Sta.	Fellsway	Malden	1	82,564	6,306	463,400	607,054	96.27	529,376	12.8%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
95	West Medford - Sullivan Sta.	Fellsway	Sullivan	6	160,825	14,126	982,086	1,286,533	91.08	1,118,797	13.0%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
78	Arlmont Village - Harvard	Somerville	Harvard	4	218,029	16,408	1,213,176	1,589,261	96.86	1,378,468	13.3%
52	Dedham Mall - Watertown Square	Bartlett	Watertown Sq.	5	141,386	9,908	755,149	989,245	99.84	857,747	13.3%
220	Quincy Sta. - Hingham Center	Quincy	Quincy	6	177,848	14,630	1,043,307	1,366,732	93.42	1,184,205	13.4%
216	Quincy Sta. - Houghs Neck	Quincy	Quincy	5	133,872	11,059	787,337	1,031,411	93.26	889,750	13.7%
41	Centre & Eliot Sts. - Dudley Square	Bartlett	Dudley	2	69,719	7,600	489,384	641,093	84.35	552,678	13.8%
429	Central Sq. - North Saugus	Lynn	Lynn	2	71,850	7,613	494,888	648,303	85.16	558,185	13.9%
55	Queensberry St. - Park & Tremont Sts.	Cabot	Copley	3	72,476	9,531	579,026	758,524	79.58	647,211	14.7%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%

18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
105	Malden Sta. - Sullivan Sta. Via Faulkner	Fellsway	Sullivan	2	78,896	7,116	489,809	641,650	90.17	544,251	15.2%
20	Fields Corner Sta. - Neponset & Adams	Quincy	Fields Corner	3	119,773	12,664	823,818	1,079,202	85.22	913,986	15.3%
38	Wren St. Forest Hills Sta.	Bartlett	Forest Hills	2	83,558	7,842	531,923	696,819	88.86	589,450	15.4%
94	Medford Sq. - Davis Sq. Sta.	Fellsway	Davis	2	117,265	10,292	715,743	937,623	91.10	790,922	15.6%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	310,825	24,392	1,772,653	2,322,175	95.20	1,955,999	15.8%
39				100	3,602,190	298,319	21,217,615	27,795,075	93.17	24,200,313	12.9%

Exhibit 8
Express Route Candidates

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
300 Series Express Routes											
300	Riverside Sta. - Federal & Franklin	Albany	None	9	262,608	9,723	$1,028,409	$1,347,216	$138.56	$884,524	34.3%
301	Brighton Ctr. - Federal Franklin	Albany	Haymarket	12	203,634	11,973	988,587	1,295,049	108.16	790,824	38.9%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
305	Waltham Center-Federal & Franklin	Albany	None	11	220,776	11,164	993,480	1,301,459	116.58	703,461	45.9%
325	Elm St. - Haymarket Sta.	Fellsway	Haymarket	5	88,420	6,242	474,227	621,237	99.53	451,295	27.4%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
353	Burlington Ind. Area - Haymarket Sta.	Charlestown	Haymarket	0	89,640	4,781	414,074	542,437	113.46	470,999	13.2%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.16	240,264	51.3%
				77	1,639,472	85,386	7,484,566	9,804,780	114.83	5,689,545	42.0%
400 Series Express Routes											
400	Lynn - Boston Via Common	Lynn	Haymarket	5	282,971	15,610	1,329,440	1,741,566	111.57	1,359,847	21.9%
426	Lynn - Boston Via Cliftondale	Lynn	Haymarket	13	277,423	18,490	1,440,725	1,887,350	102.07	1,501,618	20.4%
440	Lynn - Boston Via Lynnway	Lynn	Haymarket	7	225,312	14,501	1,147,862	1,503,699	103.70	1,043,846	30.6%
441	Central Sq. - Marblehead Via Vinnin	Lynn	Haymarket	2	111,183	6,402	533,935	699,455	109.26	521,475	25.4%
442	Central Sq. - Marblehead Via Humphrey	Lynn	Haymarket	2	176,551	9,813	832,637	1,090,754	111.15	905,876	18.5%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	310,825	24,392	1,772,653	2,322,175	95.20	1,955,999	15.8%
455	Central Sq. - Salem Center	Lynn	Haymarket	2	141,209	12,245	855,487	1,120,688	91.52	823,703	26.5%
				41	1,525,474	101,453	7,912,739	10,365,687	102.17	8,112,363	21.9%

Exhibit 9
Listing of Routes by Garage

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
Albany Garage											
47	Central Sq. - Albany St.	Albany	Central Sq.	4	208,016	24,084	$1,520,858	$1,992,324	$82.72	$1,631,105	18.1%
53	Roberts - Newton Corner	Albany	Newton Corner	2	54,396	5,838	377,875	495,016	84.79	408,573	17.5%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
59	Needham Junction - Watertown Sq.	Albany	Watertown Sq.	3	117,020	9,912	698,793	915,419	92.35	769,595	15.9%
60	Chestnut Hill - Kenmore Sta.	Albany	Kenmore	4	162,344	16,212	1,075,537	1,408,953	86.91	1,142,065	18.9%
65	Brighton Center. - Kenmore Sta.	Albany	Kenmore	3	76,501	9,998	608,496	797,130	79.73	595,868	25.2%
170	Industrial Park - Dudley	Albany	None		11,504	959	68,032	89,122	92.93	89,122	0.0%
300	Riverside Sta. - Federal & Franklin	Albany	None	9	262,608	9,723	1,028,409	1,347,216	138.56	884,524	34.3%
301	Brighton Ctr. - Federal Franklin	Albany	Haymarket	12	203,634	11,973	988,587	1,295,049	108.16	790,824	38.9%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
305	Waltham Center-Federal & Franklin	Albany	None	11	220,776	11,164	993,480	1,301,459	116.58	703,461	45.9%
15				85	2,441,915	187,627	13,753,844	18,017,536	96.03	12,394,957	31.2%
Bartlett Garage											
14	Roslindale Square - Dudley Square	Bartlett	Dudley	1	41,010	3,324	238,441	312,358	93.97	257,030	17.7%
24	Wakefield Ave. - Mattapan Sta.	Bartlett	Mattapan	2	89,101	9,311	608,112	796,627	85.56	630,096	20.9%
26	Ashmont Sta. - Washington & Norfolk Belt	Bartlett	Ashmont	2	71,484	8,254	521,673	683,392	82.80	482,569	29.4%
27	Mattapan Sta. - Ashmont Sta.	Bartlett	Ashmont	1	37,111	4,208	267,504	350,430	83.28	275,272	21.4%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,776	2,988,482	3,914,911	81.94	2,715,339	30.6%
29	Mattapan Sta. - Ruggles Sta.	Bartlett	Mattapan	4	120,131	13,882	877,157	1,149,076	82.77	818,972	28.7%
30	Mattapan Sta. - Roslindale Square	Bartlett	Mattapan	2	102,535	10,606	695,106	910,589	85.86	673,611	26.0%
31	Mattapan Sta. - Forest Hills Sta.	Bartlett	Forest Hills	5	188,813	21,453	1,362,885	1,785,379	83.22	1,328,514	25.6%
32	Walcott St./Cleary Sq. - Forest Hills Sta.	Bartlett	Forest Hills	8	304,651	27,531	1,893,652	2,480,684	90.11	1,874,160	24.4%
33	River & Milton Sts. - Mattapan Sta.	Bartlett	Mattapan	1	44,988	4,329	290,995	381,203	88.06	300,457	21.2%
34	Walpole/Dedham Line - Forest Hills Sta.	Bartlett	Forest Hills	12	550,386	45,988	3,259,438	4,269,864	92.85	3,345,048	21.7%
35	Dedham Mall - Forest Hills Sta.	Bartlett	Forest Hills	3	147,997	13,796	938,099	1,228,910	89.08	976,155	20.6%
36	Charles River Loop - Forest Hills Sta.	Bartlett	Forest Hills	5	274,438	19,742	1,487,774	1,948,984	98.72	1,592,366	18.3%
37	Baker & Vermont Sts. - Forest Hills Sta.	Bartlett	Forest Hills	3	101,435	11,879	747,433	979,137	82.43	805,265	17.8%
38	Wren St. Forest Hills Sta.	Bartlett	Forest Hills	2	83,558	7,842	531,923	696,819	88.86	589,450	15.4%

39	Forest Hills Sta. - Back Bay Sta.	Bartlett	Forest Hills	24	717,314	83,709	5,272,863	6,907,451	82.52	5,026,634	27.2%
40	Georgetown - Forest Hills Sta.	Bartlett	Forest Hills	2	63,872	5,928	403,739	528,898	89.22	422,406	20.1%
41	Centre & Eliot Sts. - Dudley Square	Bartlett	Dudley	2	69,719	7,600	489,384	641,093	84.35	552,678	13.8%
42	Forest Hills Sta. - Ruggles via Washington	Bartlett	Ruggles	5	127,569	17,145	1,035,081	1,355,956	79.09	1,119,635	17.4%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
48	Centre & Eliot Sts. - Jamaica Plain Loop	Bartlett	Dudley	0	21,960	2,255	148,160	194,090	86.07	165,604	14.7%
50	Cleary Sq. - Forest Hills Sta. via Metropoltn.	Bartlett	Forest Hills	3	60,830	6,054	402,114	526,769	87.01	398,912	24.3%
51	Cleveland Circle - Forest Hills Sta.	Bartlett	Forest Hills	3	141,429	11,042	804,136	1,053,418	95.40	842,405	20.0%
52	Dedham Mall - Watertown Square	Bartlett	Watertown Sq.	5	141,386	9,908	755,149	989,245	99.84	857,747	13.3%
191	Early AM Employee trips	Bartlett	None	0	4,183	349	24,750	32,423	92.90	32,423	0.0%
192	Early AM Employee trips	Bartlett	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
195	Early AM Employee trips	Bartlett	None	0	3,237	270	19,150	25,087	92.91	25,087	0.0%
27				109	3,945,657	398,432	26,330,329	34,492,732	86.57	26,414,717	23.4%
Cabot Garage											
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	$2,842,856	$3,724,141	$78.25	$2,245,300	39.7%
3	Bos. Marine Ind. Pk. - Chinatown	Cabot	Chinatown	2	16,135	2,058	126,154	165,262	80.30	135,571	18.0%
5	City Point - McCormack Housing	Cabot	Andrew	0	10,065	1,855	103,320	135,349	72.96	110,698	18.2%
6	Marine Ind. Pk. - South Station/Haymarket	Cabot	Haymarket	3	39,458	5,084	310,714	407,035	80.08	331,110	18.7%
7	City Point - Franklin & Devonshire Sts.	Cabot	South	5	107,155	13,096	813,168	1,065,250	81.34	828,162	22.3%
8	Harbor Point/U.Mass - Kenmore Sta.	Cabot	Kenmore	12	241,570	30,099	1,858,010	2,433,993	80.87	2,004,189	17.7%
9	City Point - Copley Sq.Via Broadway	Cabot	Copley	7	211,512	26,728	1,642,952	2,152,267	80.52	1,498,632	30.4%
10	City Point - Copley Sq. via B.C.H.	Cabot	Copley	3	119,229	14,471	900,456	1,179,597	81.51	942,509	20.1%
11	City Point - Downtown Via Broadway	Cabot	Downtown	12	230,488	29,433	1,803,589	2,362,702	80.27	1,779,295	24.7%
15	Kane Sq. - Ruggles Sta.	Cabot	Ruggles	7	167,643	23,126	1,385,894	1,815,521	78.51	1,221,596	32.7%
16	Forest Hills Sta. - JFK/UMass	Cabot	Andrew	5	175,164	16,913	1,135,500	1,487,505	87.95	1,251,294	15.9%
17	Fields Corner Sta. - JFK/UMass	Cabot	Andrew	3	89,151	11,240	691,387	905,717	80.58	432,637	52.2%
18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
21	Ashmont Sta. - Forest Hills Sta.	Cabot	Forest Hills	4	142,187	11,343	818,871	1,072,721	94.57	724,430	32.5%
22	Ashmont Sta. - Ruggles Sta. via Jackson	Cabot	Ruggles	12	335,471	36,622	2,357,067	3,087,758	84.31	2,434,780	21.1%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
43	Ruggles Sta. - Park & Tremont Sts.	Cabot	Ruggles	5	141,080	21,393	1,249,558	1,636,921	76.52	1,238,451	24.3%
44	Jackson Sta. - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	172,334	19,852	1,255,635	1,644,882	82.86	1,021,595	37.9%
45	Franklin Park - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	164,400	19,557	1,224,510	1,604,108	82.02	1,098,160	31.5%
49	Dudley Sq. - Downtown	Cabot	Dudley	7	196,218	32,223	1,844,359	2,416,110	74.98	1,731,360	28.3%
55	Queensberry St. - Park & Tremont Sts.	Cabot	Copley	3	72,476	9,531	579,026	758,524	79.58	647,211	14.7%
66	Harvard Sq. - Dudley Sq. via Brookline	Cabot	Harvard	10	346,984	45,887	2,783,191	3,645,980	79.46	2,627,072	27.9%
193	Early AM Employee trips	Cabot	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
24				141	3,768,497	470,943	29,045,267	38,049,299	80.79	27,191,136	28.5%

Charlestown Garage										
89	Clarendon Hill - Sullivan Sta.	Charlestown	Sullivan	6	133,432	15,550	979,923	1,283,699	82.55	776,436	39.5%
90	Davis Sq. Sta. - Wellington Sta.	Charlestown	Wellington	3	68,359	6,779	450,836	590,595	87.12	474,461	19.7%
91	Sullivan Sta. - Central Sq. Cambridge	Charlestown	Sullivan	2	72,206	9,945	596,247	781,084	78.54	600,420	23.1%
92	Sullivan Sta. - Franklin & Wash. Via Main	Charlestown	Haymarket	5	147,613	12,794	894,012	1,171,156	91.54	962,773	17.8%
93	Sullivan Sta. - Franklin & Wash. Sts.	Charlestown	Haymarket	11	157,675	22,667	1,342,980	1,759,304	77.62	1,284,252	27.0%
104	Malden Sta. - Sullivan Sta. Via Ferry St.	Charlestown	Sullivan	5	143,014	15,149	984,866	1,290,174	85.17	938,706	27.2%
109	Linden Sq. - Sullivan Sta.	Charlestown	Sullivan	5	156,273	16,752	1,084,732	1,420,999	84.83	1,153,892	18.8%
110	Wonderland Sta. - Wellington Sta.	Charlestown	Wellington	6	169,638	15,995	1,083,105	1,418,868	88.71	1,174,987	17.2%
111	Woodlawn - Haymarket Sta.	Charlestown	Haymarket	11	300,549	29,356	1,962,811	2,571,282	87.59	1,931,342	24.9%
112	Wellington Sta. - Maverick Sta.	Charlestown	Maverick	3	139,665	13,172	891,868	1,168,347	88.70	930,821	20.3%
194	Early AM Employee trips	Charlestown	None	0	1,195	100	7,083	9,279	92.79	9,279	0.0%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
353	Burlington Ind. Area - Haymarket Sta.	Charlestown	Haymarket	0	89,640	4,781	414,074	542,437	113.46	470,999	13.2%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.16	240,264	51.3%
14				74	1,769,321	171,867	11,514,013	15,083,357	87.76	11,316,605	25.0%
Fellsway Garage										
94	Medford Sq. - Davis Sq. Sta.	Fellsway	Davis	2	117,265	10,292	715,743	937,623	91.10	790,922	15.6%
95	West Medford - Sullivan Sta.	Fellsway	Sullivan	6	160,825	14,126	982,086	1,286,533	91.08	1,118,797	13.0%
96	Medford Sq. - Bennett Alley Via George	Fellsway	Harvard	3	111,670	14,174	870,116	1,139,852	80.42	949,765	16.7%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%
99	Upper Highland Ave. - Wellington Sta.	Fellsway	Malden	4	148,950	12,731	894,397	1,171,660	92.03	982,779	16.1%
100	Elm St. - Wellington Sta.	Fellsway	Wellington	2	106,491	9,493	656,302	859,756	90.57	720,615	16.2%
101	Salem St. - Sullivan Sta.	Fellsway	Sullivan	9	196,984	20,321	1,333,041	1,746,284	85.93	1,322,725	24.3%
105	Malden Sta. - Sullivan Sta. Via Faulkner	Fellsway	Sullivan	2	78,896	7,116	489,809	641,650	90.17	544,251	15.2%
106	Lebanon St. Loop - Wellington Sta.	Fellsway	Wellington	4	150,607	14,414	970,796	1,271,743	88.23	1,060,840	16.6%
108	Linden Sq. - Wellington Sta.	Fellsway	Wellington	4	159,702	16,483	1,081,091	1,416,229	85.92	1,142,986	19.3%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
131	Melrose Highlands - Malden Sta.	Fellsway	Malden	2	52,888	4,349	310,186	406,344	93.43	340,060	16.3%
134	North Woburn - Wellington Sta.	Fellsway	Wellington	4	185,697	18,652	1,234,905	1,617,726	86.73	1,297,731	19.8%
136	Reading Sq. - Malden Sta. Via Lakeside	Fellsway	Malden	4	93,324	7,193	526,602	689,849	95.91	529,779	23.2%
137	Reading Depot - Malden Sta. Via North St.	Fellsway	Malden	4	104,111	8,191	594,652	778,994	95.10	589,862	24.3%
325	Elm St. - Haymarket Sta.	Fellsway	Haymarket	5	88,420	6,242	474,227	621,237	99.53	451,295	27.4%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
411	Granada Highlands - Malden Sta.	Fellsway	Malden	1	82,564	6,306	463,400	607,054	96.27	529,376	12.8%
430	Appleton St. Suagus - Malden Sta.	Fellsway	Malden	2	82,878	6,604	476,975	624,837	94.61	566,770	9.3%
19				67	2,115,631	192,004	13,185,557	17,273,080	89.96	14,108,203	18.3%

Lynn Garage											
116	Wonderland Sta. - Maverick Via Revere	Lynn	Maverick	5	159,858	16,168	1,067,873	1,398,914	86.52	935,147	33.2%
117	Wonderland Sta. - Maverick Via Beach	Lynn	Maverick	4	141,086	14,918	970,435	1,271,270	85.22	898,437	29.3%
119	North Gate - Beachmont Sta.	Lynn	Beachmont	2	88,891	7,610	542,916	711,220	91.07	587,855	17.3%
120	Orient Heights Sta. - Maverick Sta.	Lynn	Maverick	5	154,856	17,364	1,107,828	1,451,255	83.58	1,078,422	25.7%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	76.30	68,641	39.8%
181	Blue Line shuttle - late night	Lynn	Wonderland	0	3,984	332	23,555	30,857	92.94	30,857	0.0%
400	Lynn - Boston Via Common	Lynn	Haymarket	5	282,971	15,610	1,329,440	1,741,566	111.57	1,359,847	21.9%
426	Lynn - Boston Via Cliftondale	Lynn	Haymarket	13	277,423	18,490	1,440,725	1,887,350	102.07	1,501,616	20.4%
429	Central Sq. - North Saugus	Lynn	Lynn	2	71,850	7,613	494,888	648,303	85.16	558,185	13.9%
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	113,941	149,263	87.60	141,014	5.5%
435	Central Sq. - Liberty Tree Mall	Lynn	Lynn	0	83,274	6,776	485,309	635,755	93.82	575,602	9.5%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
437	Central Sq. - Lakeside	Lynn	Lynn	2	62,240	5,970	401,764	526,311	88.16	494,646	6.0%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
440	Lynn - Boston Via Lynnway	Lynn	Haymarket	7	225,312	14,501	1,147,862	1,503,699	103.70	1,043,846	30.6%
441	Central Sq. - Marblehead Via Vinnin	Lynn	Haymarket	2	111,183	6,402	533,935	699,455	109.26	521,475	25.4%
442	Central Sq. - Marblehead Via Humphrey	Lynn	Haymarket	2	174,310	9,626	619,376	1,073,383	111.51	671,133	18.6%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	10	192,350	14,518	1,072,123	1,404,481	96.74	1,038,305	26.1%
451	Salem Center - North Beverly	Lynn	Salem	1	33,416	2,702	194,008	254,150	94.06	200,391	21.2%
455	Central Sq. - Salem Center	Lynn	Salem	2	141,209	12,245	855,487	1,120,688	91.52	823,703	26.5%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
470	Central Sq. - Riverworks	Lynn	None	0	2,390	199	14,124	18,502	92.97	18,502	0.0%
473	No. Saugus - Riverworks	Lynn	None	0	946	79	5,600	7,336	92.86	7,336	0.0%
475	Buchanan Bridge - Riverworks	Lynn	None	1	6,125	510	36,196	47,417	92.97	47,417	0.0%
476	Essex @ Empire - Riverworks	Lynn	None	0	847	71	5,026	6,584	92.73	6,584	0.0%
28				71	2,390,376	188,767	13,684,280	17,926,407	94.96	13,902,771	22.4%
Quincy Garage											
20	Fields Corner Sta. - Neponset & Adams	Quincy	Fields Corner	3	119,773	12,664	823,818	1,079,202	85.22	913,986	15.3%
210	Quincy Sta. - No. Quincy. Via Hancock	Quincy	Fields Corner	2	68,170	6,776	450,268	589,851	87.05	485,769	17.6%
211	Quincy Sta. - Squantum	Quincy	Quincy	1	68,642	6,524	440,499	577,054	88.45	481,956	16.5%
212	Quincy Sta. - North Quincy Sta.	Quincy	Quincy	1	18,579	2,007	129,625	169,809	84.61	141,323	16.6%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	416,336	548,020	61.49	352,784	35.6%
215	Quincy Sta. - Ashmont Sta. Via W. Quincy	Quincy	Ashmont	3	161,235	13,088	938,289	1,229,159	93.91	998,296	16.8%
216	Quincy Sta. - Houghs Neck	Quincy	Quincy	5	133,872	11,059	787,337	1,031,411	93.26	889,750	13.7%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	376,836	493,655	90.58	440,847	10.7%
220	Quincy Sta. - Hingham Center	Quincy	Quincy	6	177,846	14,630	1,043,307	1,366,732	93.42	1,184,205	13.4%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
222	Quincy Sta. - East Weymouth	Quincy	Quincy	5	193,280	13,357	1,024,230	1,341,741	100.45	1,113,808	17.0%
225	Quincy Sta. - Weymouth Via Desmoines	Quincy	Quincy	5	153,217	13,929	955,943	1,252,285	69.90	1,031,412	17.6%

230	Quincy Sta. - Brockton Line	Quincy	Quincy	4	219,439	16,192	1,207,136	1,581,348	97.66	1,405,095	11.1%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	91.55	443,841	10.2%
238	North Randolph - So. Shore Plaza	Quincy	Ashmont	2	165,617	10,821	850,725	1,114,450	102.99	987,032	11.4%
240	Crawford Sq. - Ashmont Sta.	Quincy	Ashmont	6	263,477	15,986	1,300,423	1,703,554	106.57	1,368,194	19.7%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
276	Boston City Hospital - Long Island	Quincy	None	3	39,093	3,258	231,148	302,804	92.94	302,804	0.0%
277	Shattuck Hospital - Downtown	Quincy	Downtown	1	2,739	228	16,184	21,201	92.99	21,201	0.0%
19				57	2,039,043	164,467	11,820,754	15,485,187	94.15	13,089,622	15.5%
Somerville Garage											
62	Bedford V. A. Hospital - Alewife Sta.	Somerville	Alewife	3	155,192	9,300	760,968	996,868	107.19	802,067	19.5%
64	Oak Sq. - Central Sq. Cambridge	Somerville	Kendall Sq.	4	124,084	13,724	879,517	1,152,167	83.95	949,481	17.6%
67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
69	Harvard Sq. - Lechmere Sta.	Somerville	Lechmere	7	98,673	14,290	844,963	1,106,902	77.46	707,337	36.1%
70	Cedarwood - Central Sq. Cambridge	Somerville	Central Sq.	10	461,045	36,906	2,660,642	3,485,441	94.44	2,743,062	21.3%
74	Belmont Center - Harvard	Somerville	Harvard	3	154,708	11,804	867,793	1,136,809	96.31	939,601	17.3%
76	Hanscom Air Base - Alewife Sta.	Somerville	Alewife	3	175,686	8,837	788,555	1,033,007	116.90	909,348	12.0%
77	Arlington Heights - Harvard	Somerville	Harvard	11	485,322	50,129	3,287,008	4,305,980	85.90	3,468,503	19.4%
78	Arlmont Village - Harvard	Somerville	Harvard	4	218,029	16,408	1,213,176	1,589,261	96.86	1,378,468	13.3%
79	Arlington Heights - Alewife Sta.	Somerville	Alewife	6	115,579	11,932	782,532	1,025,117	85.91	829,224	19.1%
80	Arlington Center - Lechmere Sta.	Somerville	Lechmere	5	170,571	15,876	1,080,139	1,414,982	89.13	1,026,482	27.5%
83	Rindge Ave. - Central Sq. Cambridge	Somerville	Central Sq.	7	106,280	14,577	874,984	1,146,229	78.63	819,083	28.5%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
85	Spring Hill - Kendall Sta.	Somerville	Kendall	1	24,900	3,133	192,832	252,610	80.63	203,418	19.5%
86	Sullvan Sta. - Cleveland Circle	Somerville	Sullivan	5	176,266	18,711	1,215,568	1,592,394	85.10	1,220,109	23.4%
87	Clarendon Hill - Lechmere Sta. Via Som.	Somerville	Lechmere	4	175,834	17,744	1,172,879	1,536,471	86.59	1,136,139	26.1%
88	Clarendon Hill - Lechmere Sta. Via Hglnd.	Somerville	Lechmere	8	165,970	19,105	1,208,667	1,583,354	82.88	1,167,902	26.2%
350	Burlington - Alewife Sta.	Somerville	Alewife	5	253,440	15,657	1,262,954	1,654,470	105.67	1,451,136	12.3%
18				89	3,141,372	284,865	19,568,514	25,634,754	89.99	20,301,523	20.8%

Exhibit 10

Routes Grouped by Stations and Terminals

Route No.	Name	Garage	Stations	Peak Buses	Annual Mileage	Annual Veh Hrs	Variable Cost	Full Cost	Full Cost/ Hour	Subsidy	Oper Ratio
Alewife											
62	Bedford V. A. Hospital - Alewife Sta.	Somerville	Alewife	3	155,192	9,300	$760,968	$996,868	$107.19	$802,067	19.5%
67	Alewife Sta. - Turkey Hill Reservation	Somerville	Alewife	2	56,188	5,076	349,183	457,430	90.12	406,485	11.1%
76	Hanscom Air Base - Alewife Sta.	Somerville	Alewife	3	175,686	8,837	788,555	1,033,007	116.90	909,348	12.0%
79	Arlington Heights - Alewife Sta.	Somerville	Alewife	6	115,579	11,932	782,532	1,025,117	85.91	829,224	19.1%
84	Arlmont - Alewife Sta.	Somerville	Alewife	1	23,605	1,656	126,154	165,262	99.80	143,679	13.1%
350	Burlington - Alewife Sta.	Somerville	Alewife	5	253,440	15,657	1,262,954	1,654,470	105.67	1,451,136	12.3%
6				20	779,690	52,458	4,070,346	5,332,154	101.65	4,541,938	14.8%
Andrew											
5	City Point - McCormack Housing	Cabot	Andrew	0	10,065	1,855	103,320	135,349	72.96	110,698	18.2%
16	Forest Hills Sta. - JFK/UMass	Cabot	Andrew	5	175,164	16,913	1,135,500	1,487,505	87.95	1,251,294	15.9%
17	Fields Corner Sta. - JFK/UMass	Cabot	Andrew	3	89,151	11,240	691,387	905,717	80.58	432,637	52.2%
18	Ashmont Sta. - Broadway Sta.	Cabot	Andrew	2	48,431	5,285	340,196	445,657	84.32	379,045	14.9%
4				10	322,811	35,293	2,270,403	2,974,228	84.27	2,173,673	26.9%
Ashmont											
26	Ashmont Sta. - Washington & Norfolk Belt	Bartlett	Ashmont	2	71,484	8,254	521,673	683,392	82.80	482,569	29.4%
27	Mattapan Sta. - Ashmont Sta.	Bartlett	Ashmont	1	37,111	4,208	267,504	350,430	83.28	275,272	21.4%
215	Quincy Sta. - Ashmont Sta. Via W. Quincy	Quincy	Ashmont	3	161,235	13,088	938,289	1,229,159	93.91	998,296	18.8%
217	Wollaston - Ashmont Sta.	Quincy	Ashmont	2	61,158	5,450	376,836	493,655	90.58	440,847	10.7%
238	North Randolph - So. Shore Plaza	Quincy	Ashmont	2	165,617	10,821	850,725	1,114,450	102.99	987,032	11.4%
240	Crawford Sq. - Ashmont Sta.	Quincy	Ashmont	6	263,477	15,986	1,300,423	1,703,554	106.57	1,368,194	19.7%
6				16	760,082	57,807	4,255,450	5,574,640	96.44	4,552,210	18.3%
Beachmont											
119	North Gate - Beachmont Sta.	Lynn	Beachmont	2	88,891	7,810	542,916	711,220	91.07	587,855	17.3%
Central Square											
47	Central Sq. - Albany St.	Albany	Central Sq.	4	208,016	24,084	1,520,858	1,992,324	82.72	1,631,105	18.1%
70	Cedarwood - Central Sq. Cambridge	Somerville	Central Sq.	10	461,045	36,906	2,660,642	3,485,441	94.44	2,743,062	21.3%
83	Rindge Ave. - Central Sq. Cambridge	Somerville	Central Sq.	7	106,280	14,577	874,984	1,146,229	78.63	819,083	28.5%
3				21	775,341	75,567	5,056,484	6,623,994	87.66	5,193,250	21.6%
Chinatown											
3	Bos. Marine Ind. Pk. - Chinatown	Cabot	Chinatown	2	16,135	2,058	126,154	165,262	80.30	135,571	18.0%

Copley											
9	City Point - Copley Sq.Via Broadway	Cabot	Copley	7	211,512	26,728	1,642,952	2,152,267	80.52	1,498,632	30.4%
10	City Point - Copley Sq. via B.C.H.	Cabot	Copley	3	119,229	14,471	900,456	1,179,597	81.51	942,509	20.1%
55	Queensberry St. - Park & Tremont Sts.	Cabot	Copley	3	72,476	9,531	579,026	758,524	79.58	647,211	14.7%
3				13	403,217	50,730	3,122,434	4,090,388	80.63	3,088,352	24.5%
Davis											
94	Medford Sq. - Davis Sq. Sta.	Fellsway	Davis	2	117,265	10,292	715,743	937,623	91.10	790,922	15.6%
Downtown											
11	City Point - Downtown Via Broadway	Cabot	Downtown	12	230,488	29,433	1,803,589	2,362,702	80.27	1,779,295	24.7%
277	Shattuck Hospital - Downtown	Quincy	Downtown	1	2,739	228	16,184	21,201	92.99	21,201	0.0%
2				13	233,227	29,661	1,819,773	2,383,903	80.37	1,800,496	24.5%
Dudley											
14	Roslindale Square - Dudley Square	Bartlett	Dudley	1	41,010	3,324	238,441	312,358	93.97	257,030	17.7%
41	Centre & Eliot Sts. - Dudley Square	Bartlett	Dudley	2	69,719	7,600	489,384	641,093	84.35	552,678	13.8%
46	Heath St. & S. Huntington Ave. - Dudley Sq.	Bartlett	Dudley	1	32,963	3,985	248,268	325,231	81.61	282,174	13.2%
48	Centre & Eliot Sts. - Jamaica Plain Loop	Bartlett	Dudley	0	21,960	2,255	148,160	194,090	86.07	165,604	14.7%
49	Dudley Sq. - Downtown	Cabot	Dudley	7	196,218	32,223	1,844,359	2,416,110	74.98	1,731,360	28.3%
5				11	361,870	49,387	2,968,612	3,888,882	78.74	2,988,847	23.1%
Fields Corner											
20	Fields Corner Sta. - Neponset & Adams	Quincy	Fields Corner	3	119,773	12,664	823,818	1,079,202	85.22	913,986	15.3%
210	Quincy Sta. - No. Quincy. Via Hancock	Quincy	Fields Corner	2	68,170	6,776	450,268	589,851	87.05	485,769	17.6%
2				5	187,943	19,440	1,274,086	1,669,053	85.86	1,399,755	16.1%
Forest Hills											
21	Ashmont Sta. - Forest Hills Sta.	Cabot	Forest Hills	4	142,187	11,343	818,871	1,072,721	94.57	724,430	32.5%
31	Mattapan Sta. - Forest Hills Sta.	Bartlett	Forest Hills	5	188,813	21,453	1,362,885	1,785,379	83.22	1,328,514	25.6%
32	Walcott St./Cleary Sq. - Forest Hills Sta.	Bartlett	Forest Hills	8	304,651	27,531	1,893,652	2,480,684	90.11	1,874,160	24.4%
34	Walpole/Dedham Line - Forest Hills Sta.	Bartlett	Forest Hills	12	550,386	45,988	3,259,438	4,269,864	92.85	3,345,048	21.7%
35	Dedham Mall - Forest Hills Sta.	Bartlett	Forest Hills	3	147,997	13,796	938,099	1,228,910	89.08	976,155	20.6%
36	Charles River Loop - Forest Hills Sta.	Bartlett	Forest Hills	5	274,438	19,742	1,487,774	1,948,984	98.72	1,592,366	18.3%
37	Baker & Vermont Sts. - Forest Hills Sta.	Bartlett	Forest Hills	3	101,435	11,879	747,433	979,137	82.43	805,265	17.8%
38	Wren St. Forest Hills Sta.	Bartlett	Forest Hills	2	83,558	7,842	531,923	696,819	88.86	589,450	15.4%
39	Forest Hills Sta. - Back Bay Sta.	Bartlett	Forest Hills	24	717,314	83,709	5,272,863	6,907,451	82.52	5,026,634	27.2%
40	Georgetown - Forest Hills Sta.	Bartlett	Forest Hills	2	63,872	5,928	403,739	528,898	89.22	422,406	20.1%
50	Cleary Sq. - Forest Hills Sta. via Metropoltn.	Bartlett	Forest Hills	3	60,830	6,054	402,114	526,769	87.01	398,912	24.3%
51	Cleveland Circle - Forest Hills Sta.	Bartlett	Forest Hills	3	141,429	11,042	804,136	1,053,418	95.40	842,405	20.0%
12				74	2,776,910	266,307	17,922,927	23,479,034	88.17	17,925,746	23.7%

Harvard											
1	Harvard-Dudley Sq. Via Mass Ave.	Cabot	Harvard	10	340,982	47,594	2,842,856	3,724,141	78.25	$2,245,300	39.7%
66	Harvard Sq. - Dudley Sq. via Brookline	Cabot	Harvard	10	346,984	45,887	2,783,191	3,645,980	79.46	2,627,072	27.9%
74	Belmont Center - Harvard	Somerville	Harvard	3	154,708	11,804	867,793	1,136,809	96.31	939,601	17.3%
77	Arlington Heights - Harvard	Somerville	Harvard	11	485,322	50,129	3,287,008	4,305,980	85.90	3,468,503	19.4%
78	Arlmont Village - Harvard	Somerville	Harvard	4	218,029	16,408	1,213,176	1,589,261	96.86	1,378,468	13.3%
96	Medford Sq. - Bennett Alley Via George	Fellsway	Harvard	3	111,670	14,174	870,116	1,139,852	80.42	949,765	16.7%
6				41	1,657,695	185,996	11,864,140	15,542,023	83.56	11,608,709	25.3%
Haymarket											
6	Marine Ind. Pk. - South Station/Haymarket	Cabot	Haymarket	3	39,458	5,084	310,714	407,035	80.06	331,110	18.7%
92	Sullivan Sta. - Franklin & Wash. Via Main	Charlestown	Haymarket	5	147,613	12,794	894,012	1,171,156	91.54	962,773	17.8%
93	Sullivan Sta. - Franklin & Wash. Sts.	Charlestown	Haymarket	11	157,675	22,667	1,342,980	1,759,304	77.62	1,284,252	27.0%
111	Woodlawn - Haymarket Sta.	Charlestown	Haymarket	11	300,549	29,356	1,962,811	2,571,282	87.59	1,931,342	24.9%
301	Brighton Ctr. - Federal Franklin	Albany	Haymarket	12	203,634	11,973	988,587	1,295,049	108.16	790,824	38.9%
325	Elm St. - Haymarket Sta.	Fellsway	Haymarket	5	88,420	6,242	474,227	621,237	99.53	451,295	27.4%
326	West Medford - Haymarket Sta.	Fellsway	Haymarket	5	96,463	5,702	469,607	615,185	107.89	444,931	27.7%
352	Burlington Line - Haymarket Sta. Via I-93	Charlestown	Haymarket	8	109,386	4,424	444,494	582,287	131.62	367,973	36.8%
353	Burlington Ind. Area - Haymarket Sta.	Charlestown	Haymarket	0	89,640	4,781	414,074	542,437	113.46	470,999	13.2%
354	Woburn to Dowtown	Charlestown	Haymarket	9	80,676	4,403	376,982	493,846	112.16	240,264	51.3%
400	Lynn - Boston Via Common	Lynn	Haymarket	5	282,971	15,610	1,329,440	1,741,566	111.57	1,359,847	21.9%
426	Lynn - Boston Via Cliftondale	Lynn	Haymarket	13	277,423	18,490	1,440,725	1,887,350	102.07	1,501,618	20.4%
440	Lynn - Boston Via Lynnway	Lynn	Haymarket	7	225,312	14,501	1,147,862	1,503,699	103.70	1,043,846	30.6%
441	Central Sq. - Marblehead Via Vinnin	Lynn	Haymarket	2	111,183	6,402	533,935	699,455	109.26	521,475	25.4%
442	Central Sq. - Marblehead Via Humphrey	Lynn	Haymarket	2	175,157	9,697	824,402	1,079,967	111.37	884,301	18.7%
450	Salem - Boston Via Western Ave.	Lynn	Haymarket	16	334,925	29,774	2,060,583	2,699,364	90.66	2,333,188	13.6%
16				114	2,720,485	201,900	15,015,435	19,670,219	97.43	14,920,036	24.2%
Kendal Square											
85	Spring Hill - Kendall Sta.	Somerville	Kendall	1	24,900	3,133	192,832	252,610	80.63	203,418	19.5%
64	Oak Sq. - Central Sq. Cambridge	Somerville	Kendall	4	124,084	13,724	879,517	1,152,167	83.95	949,481	17.6%
2				5	148,984	16,857	1,072,349	1,404,777	83.33	1,152,899	17.9%
Kenmore											
8	Harbor Point/U.Mass - Kenmore Sta.	Cabot	Kenmore	12	241,570	30,099	1,858,010	2,433,993	80.87	2,004,189	17.7%
57	Watertown Square - Kenmore Sq.	Albany	Kenmore	13	479,101	46,523	3,117,121	4,083,429	87.77	2,917,820	28.5%
60	Chestnut Hill - Kenmore Sta.	Albany	Kenmore	4	162,344	16,212	1,075,537	1,408,953	86.91	1,142,065	18.9%
65	Brighton Center. - Kenmore Sta.	Albany	Kenmore	3	76,501	9,998	608,496	797,130	79.73	595,868	25.2%
4				32	959,516	102,832	6,659,164	8,723,505	84.83	6,659,942	23.7%

Lechmere											
69	Harvard Sq. - Lechmere Sta.	Somerville	Lechmere	7	98,673	14,290	844,963	1,106,902	77.46	707,337	36.1%
80	Arlington Center - Lechmere Sta.	Somerville	Lechmere	5	170,571	15,876	1,080,139	1,414,982	89.13	1,026,482	27.5%
87	Clarendon Hill - Lechmere Sta. Via Som.	Somerville	Lechmere	4	175,834	17,744	1,172,879	1,536,471	86.59	1,136,139	26.1%
88	Clarendon Hill - Lechmere Sta. Via Hglnd.	Somerville	Lechmere	8	165,970	19,105	1,208,667	1,583,354	82.88	1,167,902	26.2%
4				24	611,048	67,015	4,306,648	5,641,709	84.19	4,037,860	28.4%
Lynn											
429	Central Sq. - North Saugus	Lynn	Lynn	2	71,850	7,613	494,888	648,303	85.16	558,185	13.9%
433	Central Sq. - Pine Hill	Lynn	Lynn	1	17,449	1,704	113,941	149,263	87.60	141,014	5.5%
435	Central Sq. - Liberty Tree Mall	Lynn	Lynn	0	83,274	6,776	485,309	635,755	93.82	575,602	9.5%
436	Central Square Lynn - Goodwin Circle	Lynn	Lynn	3	60,136	6,241	408,565	535,220	85.76	469,494	12.3%
437	Central Sq. - Lakeside	Lynn	Lynn	2	62,240	5,970	401,764	526,311	88.16	494,648	6.0%
439	Central Sq. - Nahant	Lynn	Lynn	1	30,833	3,221	210,390	275,611	85.57	258,282	6.3%
6				9	325,782	31,525	2,114,857	2,770,463	87.88	2,497,224	9.9%
Malden											
99	Upper Highland Ave. - Wellington Sta.	Fellsway	Malden	4	148,950	12,731	894,397	1,171,660	92.03	982,779	16.1%
130	Wyoming Sq. or Lebanon - Malden Sta.	Fellsway	Malden	2	58,132	5,259	361,582	473,672	90.07	411,771	13.1%
131	Melrose Highlands - Malden Sta.	Fellsway	Malden	2	52,888	4,349	310,186	406,344	93.43	340,060	16.3%
136	Reading Sq. - Malden Sta. Via Lakeside	Fellsway	Malden	4	93,324	7,193	526,602	689,849	95.91	529,779	23.2%
137	Reading Depot - Malden Sta. Via North St.	Fellsway	Malden	4	104,111	8,191	594,652	778,994	95.10	589,862	24.3%
411	Granada Highlands - Malden Sta.	Fellsway	Malden	1	82,564	6,306	463,400	607,054	96.27	529,376	12.8%
430	Appleton St. Suagus - Malden Sta.	Fellsway	Malden	2	82,878	6,604	476,975	624,837	94.61	566,770	9.3%
7				19	622,847	50,633	3,627,794	4,752,410	93.86	3,950,396	16.9%
Mattapan											
24	Wakefield Ave. - Mattapan Sta.	Bartlett	Mattapan	2	89,101	9,311	608,112	796,627	85.56	630,096	20.9%
28	Mattapan Sta. - Ruggles Sta. via Dudley	Bartlett	Mattapan	13	400,370	47,776	2,988,482	3,914,911	81.94	2,715,339	30.6%
29	Mattapan Sta. - Ruggles Sta.	Bartlett	Mattapan	4	120,131	13,882	877,157	1,149,076	82.77	818,972	28.7%
30	Mattapan Sta. - Roslindale Square	Bartlett	Mattapan	2	102,535	10,606	695,106	910,589	85.86	673,611	26.0%
33	River & Milton Sts. - Mattapan Sta.	Bartlett	Mattapan	1	44,988	4,329	290,995	381,203	88.06	300,457	21.2%
245	Quincy Sta. - Mattapan Sta.	Quincy	Mattapan	2	63,532	5,452	382,430	500,983	91.89	444,779	11.2%
6				24	820,657	91,356	5,842,282	7,653,389	83.78	5,583,253	27.0%
Maverick											
112	Wellington Sta. - Maverick Sta.	Charlestown	Maverick	3	139,665	13,172	891,868	1,168,347	88.70	930,821	20.3%
116	Wonderland Sta. - Maverick Via Revere	Lynn	Maverick	5	159,858	16,168	1,067,873	1,398,914	86.52	935,147	33.2%
117	Wonderland Sta. - Maverick Via Beach	Lynn	Maverick	4	141,086	14,918	970,435	1,271,270	85.22	898,437	29.3%
120	Orient Heights Sta. - Maverick Sta.	Lynn	Maverick	5	154,856	17,364	1,107,828	1,451,255	83.58	1,078,422	25.7%
121	Wood Island Sta. - Maverick Sta.	Lynn	Maverick	1	9,748	1,494	87,022	113,999	76.30	68,641	39.8%
5				18	605,213	63,116	4,125,026	5,403,785	85.62	3,911,468	27.6%

Newton Corner											
53	Roberts - Newton Corner	Albany	Newton Corner	2	54,396	5,838	377,875	495,016	84.79	408,573	17.5%
54	Waverley Sq. - Newton Corner	Albany	Newton Corner	2	74,166	5,516	409,860	536,917	97.34	471,181	12.2%
56	Waltham Highlands - Newton Corner	Albany	Newton Corner	2	51,361	4,809	326,474	427,681	88.93	372,134	13.0%
58	Auburndale - Newton Corner	Albany	Newton Corner	2	32,619	3,942	245,616	321,757	81.62	283,411	11.9%
4				8	212,542	20,105	1,359,825	1,781,371	88.60	1,535,299	13.8%
"None"											
170	Industrial Park - Dudley	Albany	None	0	11,504	959	68,032	89,122	92.93	89,122	0.0%
191	Early AM Employee trips	Bartlett	None	0	4,183	349	24,750	32,423	92.90	32,423	0.0%
192	Early AM Employee trips	Bartlett	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
193	Early AM Employee trips	Cabot	None	0	3,187	266	18,861	24,708	92.89	24,708	0.0%
194	Early AM Employee trips	Charlestown	None	0	1,195	100	7,083	9,279	92.79	9,279	0.0%
195	Early AM Employee trips	Bartlett	None	0	3,237	270	19,150	25,087	92.91	25,087	0.0%
276	Boston City Hospital - Long Island	Quincy	None	3	39,093	3,258	231,148	302,804	92.94	302,804	0.0%
300	Riverside Sta. - Federal & Franklin	Albany	None	9	262,608	9,723	1,028,409	1,347,216	138.56	884,524	34.3%
302	Watertown Sq. - Copley Sq.	Albany	None	5	90,238	4,914	421,195	551,765	112.28	192,894	65.0%
304	Watertown Sq. - Federal & Franklin	Albany	None	13	397,631	22,060	1,873,511	2,454,299	111.26	1,142,380	53.5%
305	Waltham Center-Federal & Franklin	Albany	None	11	220,776	11,164	993,480	1,301,459	116.58	703,461	45.9%
470	Central Sq. - Riverworks	Lynn	None	0	2,390	199	14,124	18,502	92.97	18,502	0.0%
473	No. Saugus - Riverworks	Lynn	None	0	946	79	5,600	7,336	92.86	7,336	0.0%
475	Buchanan Bridge - Riverworks	Lynn	None	1	6,125	510	36,196	47,417	92.97	47,417	0.0%
476	Essex @ Empire - Roverworks	Lynn	None	0	847	71	5,026	6,584	92.73	6,584	0.0%
15				42	1,047,147	54,188	4,765,426	6,242,709	115.20	3,511,229	43.8%
Quincy											
211	Quincy Sta. - Squantum	Quincy	Quincy	1	68,642	6,524	440,499	577,054	88.45	481,956	16.5%
212	Quincy Sta. - North Quincy Sta.	Quincy	Quincy	1	18,579	2,007	129,625	169,809	84.61	141,323	16.8%
214	Quincy Sta. - Germantown	Quincy	Quincy	4	55,354	6,725	418,336	548,020	81.49	352,784	35.6%
216	Quincy Sta. - Houghs Neck	Quincy	Quincy	5	133,872	11,059	787,337	1,031,411	93.26	889,750	13.7%
220	Quincy Sta. - Hingham Center	Quincy	Quincy	6	177,848	14,630	1,043,307	1,366,732	93.42	1,184,205	13.4%
221	Quincy Sta. - Fort Point	Quincy	Quincy	1	11,703	921	66,855	87,580	95.09	82,540	5.8%
222	Quincy Sta. - East Weymouth	Quincy	Quincy	5	193,280	13,357	1,024,230	1,341,741	100.45	1,113,808	17.0%
225	Quincy Sta. - Weymouth Via Desmoines	Quincy	Quincy	5	153,217	13,929	955,943	1,252,285	89.90	1,031,412	17.6%
230	Quincy Sta. - Brockton Line	Quincy	Quincy	4	219,439	16,192	1,207,136	1,581,348	97.66	1,405,095	11.1%
236	Quincy Sta. - S. Sh. Plaza Via Br'ntr Sta.	Quincy	Quincy	1	62,315	5,400	377,365	494,348	'91.55	443,841	10.2%
10				33	1,094,249	90,744	6,450,633	8,450,328	93.12	7,126,714	15.7%

Ruggles											
15	Kane Sq. - Ruggles Sta.	Cabot	Ruggles	7	167,643	23,126	1,385,894	1,815,521	78.51	1,221,596	32.7%
19	Fields Corner Sta. - Ruggles Sta.	Cabot	Ruggles	4	45,786	5,827	357,425	468,227	80.35	330,839	29.3%
22	Ashmont Sta. - Ruggles Sta. via Jackson	Cabot	Ruggles	12	335,471	36,622	2,357,067	3,087,758	84.31	2,434,780	21.1%
23	Ashmont Sta. - Ruggles Sta. via Wash	Cabot	Ruggles	13	351,391	41,460	2,602,568	3,409,364	82.23	2,152,492	36.9%
42	Forest Hills Sta. - Ruggles via Washington	Bartlett	Ruggles	5	127,569	17,145	1,035,081	1,355,956	79.09	1,119,635	17.4%
43	Ruggles Sta. - Park & Tremont Sts.	Cabot	Ruggles	5	141,080	21,393	1,249,558	1,636,921	76.52	1,238,451	24.3%
44	Jackson Sta. - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	172,334	19,852	1,255,635	1,644,882	82.86	1,021,595	37.9%
45	Franklin Park - Ruggles Sta. via Blue Hill	Cabot	Ruggles	6	164,400	19,557	1,224,510	1,604,108	82.02	1,098,160	31.5%
8				58	1,505,674	184,982	11,467,738	15,022,737	81.21	10,617,549	29.3%
Salem											
451	Salem Center - North Beverly	Lynn	Salem	1	33,416	2,702	194,008	254,150	94.06	200,391	21.2%
455	Central Sq. - Salem Center	Lynn	Salem	2	141,209	12,245	855,487	1,120,688	91.52	823,703	26.5%
458	Salem Center - Danvers Center	Lynn	Salem	1	37,072	3,073	218,484	286,214	93.14	252,261	11.9%
468	Salem Center - Essex Ag./Danvers Hosp.	Lynn	Salem	1	20,617	1,150	97,408	127,604	110.96	113,772	10.8%
4				5	232,314	19,170	1,365,387	1,788,656	93.30	1,390,126	22.3%
South Station											
7	City Point - Franklin & Devonshire Sts.	Cabot	South	5	107,155	13,096	813,168	1,065,250	81.34	828,162	22.3%
Sullivan											
86	Sulivan Sta. - Cleveland Circle	Somerville	Sullivan	5	176,266	18,711	1,215,568	1,592,394	85.10	1,220,109	23.4%
89	Clarendon Hill - Sullivan Sta.	Charlestown	Sullivan	6	133,432	15,550	979,923	1,283,699	82.55	776,436	39.5%
91	Sullivan Sta. - Central Sq. Cambridge	Charlestown	Sullivan	2	72,206	9,945	596,247	781,084	78.54	600,420	23.1%
95	West Medford - Sullivan Sta.	Fellsway	Sullivan	6	160,825	14,126	982,086	1,286,533	91.08	1,118,797	13.0%
101	Salem St. - Sullivan Sta.	Fellsway	Sullivan	9	196,984	20,321	1,333,041	1,746,284	85.93	1,322,725	24.3%
104	Malden Sta. - Sullivan Sta. Via Ferry St.	Charlestown	Sullivan	5	143,014	15,149	984,866	1,290,174	85.17	938,706	27.2%
105	Malden Sta. - Sullivan Sta. Via Faulkner	Fellsway	Sullivan	2	78,896	7,116	489,809	641,650	90.17	544,251	15.2%
109	Linden Sq. - Sullivan Sta.	Charlestown	Sullivan	5	156,273	16,752	1,084,732	1,420,999	84.83	1,153,892	18.8%
8				40	1,117,896	117,670	7,666,272	10,042,817	85.35	7,675,335	23.6%
Watertown Square											
52	Dedham Mall - Watertown Square	Bartlett	Watertown Sq.	5	141,386	9,908	755,149	989,245	99.84	857,747	13.3%
59	Needham Junction - Watertown Sq.	Albany	Watertown Sq.	3	117,020	9,912	698,793	915,419	92.35	769,595	15.9%
2				8	258,406	19,820	1,453,942	1,904,664	96.10	1,627,341	14.6%

Wellington											
90	Davis Sq. Sta. - Wellington Sta.	Charlestown	Wellington	3	68,359	6,779	450,836	590,595	87.12	474,461	19.7%
97	Malden Sta. - Wellington Sta. .	Fellsway	Wellington	2	39,764	4,356	280,040	366,852	84.22	312,948	14.7%
100	Elm St. - Wellington Sta.	Fellsway	Wellington	2	106,491	9,493	656,302	859,756	90.57	720,615	16.2%
106	Lebanon St. Loop - Wellington Sta.	Fellsway	Wellington	4	150,607	14,414	970,796	1,271,743	88.23	1,060,840	16.6%
108	Linden Sq. - Wellington Sta.	Fellsway	Wellington	4	159,702	16,483	1,081,091	1,416,229	85.92	1,142,986	19.3%
110	Wonderland Sta. - Wellington Sta.	Charlestown	Wellington	6	169,638	15,995	1,083,105	1,418,868	88.71	1,174,987	17.2%
134	North Woburn - Wellington Sta.	Fellsway	Wellington	4	185,697	18,652	1,234,905	1,617,726	86.73	1,297,731	19.8%
7				25	880,258	86,172	5,757,075	7,541,769	87.52	6,184,569	18.0%
Wonderland											
181	Blue Line shuttle - late night	Lynn	Wonderland	0	3,984	332	23,555	30,857	92.94	30,857	0.0%

APPENDIX E

MBTA Fare Structure and Fare Levels

Evolution of Existing Fare Structure

The MBTA fare structure is quite complex, using a combination of zone fares and flat fares for various modes of service. This structure goes back to 1968. At this time, the MBTA, which had had a flat fare since its creation in 1964 to assume and expand the operations of the former Metropolitan Transit Authority, acquired the assets of the Eastern Massachusetts Street Railway Company, which had employed zone fares.[1] Zone fares were also employed when the MBTA assumed operation of the Middlesex and Boston Street Railway in 1972. All bus fares were integrated into a common zone system in 1981.

For buses, the current base local fare is $0.60; with fares of $1.50 to $2.25 charged for various express buses. There is no transfer from bus to bus or from bus to rapid transit, light rail, or commuter rail; each trip is paid individually. Passengers may use monthly combined bus and transit or commuter rail pass, however, to transfer without an additional charge. The issue of whether to change to a transfer system has been debated for many years. A summary of the existing bus fare zone boundaries is presented in Table 1.

Fare History

MBTA fares, which remain among the lowest in the country, even when the full-priced transfers are taken into account, changed slowly in the years prior to 1980, when bus fares were raised to 25 cents, and transit fares increased to 50 cents. In 1981, bus fares were raised to a 50 cent base fare, with a zonal system, and the rapid transit fare was raised to 75 cents. This was lowered to 60 cents in 1982, in response to decreased ridership.

Fares were raised again in 1989 and again in 1991, as shown in Table 2. In 1989, base bus fares remained at 50 cents, but zone fares were altered to a maximum fare of $1.90. In 1991, the base fare was raised to 60 cents, and the maximum zone fare to $2.25. Although ridership declined somewhat after each fare increase (a loss of between 1.1% and 4.3% was estimated after the 1991 increase), fare revenue did increase. In FY 1992, fare revenue for the basic system (excluding commuter rail) rose to $130.7 million from $123.4 million in FY 1991, an

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[1]MBTA Advisory Board. MBTA Fares: An Analysis of Current Policy and Practice, Boston, January, 1989, pp. 21-22.

increase of 5.9%[2]. Basic system fare revenue covered 23.7% of FY 1992 operating costs of $550,566,823, per the 1994 Budget (excludes interest on unfunded debt).

The 1991 fare increase was the object of much public controversy, which resulted in the MBTA's publication, after the fact, of a Draft Environmental Impact Report detailing the impacts of the increase on ridership and revenue. This report, submitted in September 1992, was determined not to be in compliance with MEPPA regulations. In response, a Supplemental Draft Environmental Impact Report was submitted in January 1993. This report in turn resulted in publication of a detailed MBTA Fare Policy Statement, issued by the MBTA Board of Directors on January 6, 1993 (attached). This document outlines long and short-term fare policies and plans, and details a process for public participation in any future fare changes. The policy statement commits the MBTA not to raise fares again before January 1, 1994. In practice, it is judged by MBTA management that raising fares even after that time is likely to be extremely difficult to achieve.

Provisions of 1993 MBTA Fare Policy Statement

The Fare Policy also suggests that the MBTA establish a long-term policy goal of 33 and 1/3 percent[3] for the MBTA's fare recovery ratio, as recommended previously by the MBTA Advisory Board (defined as bus and subway revenues divided by operating expenses, excluding the commuter rail and local service subsidies and interest on unfunded debt).[4] In support of this goal, the fare policy also calls for boosting ridership and market share, integrating MBTA operations more effectively with regional land use and transportation policies, and developing new funding sources.

In the short-term, the fare policy calls for new efforts to hold down MBTA costs by "developing more efficient ways to provide its public transportation services, both as a means of achieving the Authority's long-term revenue recovery ratio goal and in order to use its operating budget and other resources as effectively as possible."[5] It also calls for continued testing and installation of new fare collection equipment on buses, trackless trolleys, and new Green Line vehicles, and at transit stations, with the objectives of providing better ridership data, reducing

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[2]Massachusetts Bay Transportation Authority. Fiscal Year 1994 Budget, December 9, 1992, p. 3-3.

[3]Note that this goal conflicts with the Fiscal Year 1994 MBTA Budget goal of achieving a 40% Revenue Recovery Ratio. (This document was published in December, 1992, however, prior to approval of the Fare Policy Statement by the MBTA Board).

[4]MBTA. Fare Policy Statement, adopted by the MBTA Board of Directors on January 6, 1993, p. 4.

[5]Ibid., p. 5.

fare evasion, making more use of pre-paid media, and providing flexibility for the fare structure. Any changes to the fare structure proposed as part of the fare collection equipment changes are to be reported on by December 1993. However, the policy states that the MBTA's basic fare structure should only be changed in order to generate significant ridership increases, to remedy inequities, or to implement significantly more efficient operating practices. No fare changes are to be implemented if they will result in significant[6] revenue loss. The fare policy also rules out a systemwide free transfer, and allows for free transfers only in the event that new fare collection equipment would allow transfers in specific instances where they are proven to be "a cost-effective way to increase ridership."[7]

The Fare Policy Statement also sets forth a procedure for evaluating and revising MBTA fare levels. This process calls for an annual review of fare levels, to be reported on each year, with the first report to be issued in May, 1993. If the fare recovery ratio, as defined above, is less than 1/3, the MBTA may consider raising fares. If a decision to raise fares is reached, a public process is outlined. In addition, the fare policy statement itself is required to be reviewed and updated prior to September 1 of each year, beginning with September 1993.

[6]"Significant" is not defined in the Fare Policy Statement.

[7]Ibid., p. 7.